From the Editor:

In this issue…

We have two articles by Maj Michael J. McCarthy both relating to issues with nuclear weapons. "Ready for Anything" and "The Four Elements" give some insight and historical perspectives which are still valid and thought provoking. Maj. White's article on joint warfighting, "How Joint," suggests that there is still some work to be done in the way we desire to conduct war.

The remainder of the publication is devoted to papers written by cadets at the US Air Force Academy and represents an excellent cross section of thinking from the Education Group's Military Strategic Studies sections. In the future the *Airman-Scholar* will devote a large percentage of its space to showcasing the best in USAF Academy cadet writing on military topics. To this end we will include the best papers obtainable from the History, Political Science, Philosophy and Military Strategic Studies programs. We welcome all departments focusing on the general theme of Contemporary Military Thought which guides the *Airman-Scholar*.

In seeking to showcase current military thought as represented by cadets at USAFA we are also trying to illuminate the issues which the future USAF leaders are grappling with as they prepare for an uncertain future. As much as any other thing, these issues presage the future of the Air Force and the kinds of problem solvers that will be coming forth from the hallowed halls of USAFA. As these same leaders express themselves in their attempts at recommendations for solutions or suggest methods of thinking about solutions, we hope to capture the "nuggets" of truly useful concepts and thoughts. A forum of sorts for an eclectic set of assertions, recommendations, and suggestions for thinkers engaged in the profession of arms to consider, to mine and to refine all coming from the fertile minds and hearts of the future leaders of the US Air Force.

The ***Airman-Scholar*** invites both full-length articles and short "letters to the editor" comments. Please submit in accordance with the following guidelines:

1. Full-length articles should be approximately 6,000 words in length, although all submissions will be considered.

2. Articles should be submitted as hard copy with accompanying 3.5 disk (not returned)

3. Articles will be edited to conform with Airman-Scholar format; proofs will not be sent to authors prior to publication.

4. Articles are encouraged from all knowledgeable members of the academic and military communities. Publication of outstanding papers by USAFA cadets and other service academy students is a particular goal of ***Airman-Scholar.***

5. Articles must be received by **1 September 2003.**

6. Send articles to:

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The 34th Education Group's mission is to oversee curriculum development and instruction in Military Strategic Studies for the cadets of the US Air Force Academy. This consists of courses covering Military Theory and Strategy, Officership, Airmanship, Aerospace Theory and Doctrine, and Joint and Coalition Operations. Group personnel conduct research on a variety of topics, including international security, space-related issues, military service culture, and educational modeling. Research activities are coordinated through the 34th Education Group Research Office.

AIRMAN SCHOLAR is published twice annually. If you have comments concerning articles, would like to contribute an article for publication, or desire to receive AIRMAN SCHOLAR, please contact us at:

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Ready for Anything:
Tension and Compromise in the Safety, Security, and Readiness of Strategic Nuclear Forces

by Maj Michael J. McCarthy

Late in the afternoon on August 5, 1945, Captain Deke Parsons finally made the decision. He would wait until the Enola Gay actually took off from North Field on Tinian before he inserted the conventional explosive and its uranium gun in the rear of the Little Boy atomic bomb. He had seen other B-29s roll off the runway at takeoff, crashing into each other, and the ensuing explosion had killed not only the crews but also rescue workers. If the Enola Gay blew up and the Little Boy was armed, the resulting explosion could destroy half the island. It was against policy and he had only ten hours to learn how to arm the weapon in flight. But he made the decision to do it anyway. To Parsons, it was clear that the safety and security of the forces on Tinian overshadowed the readiness of the weapon on what was to be the very first atomic mission.[1] Since the dawn of the atomic age, there has always been a tension between the need to provide safety and security for strategic nuclear weapons in daily operations and the need to ensure the strategic nuclear force is ready for immediate action. This tension is never fully resolved—each of the components (safety, security, and readiness) has its own complexities and forces its own imperatives on the operations and activities of strategic nuclear forces. Even today, after fifty-seven years of experience, the policy of the Department of Defense embodies that concept: "Nuclear weapon system safety, security, survivability, and use control are interrelated. Decisions concerning one shall not be made without consideration of the effect of those decisions on the others.[2] This paper will examine the relationship between those considerations, particularly during the decision process to employ strategic nuclear weapons in conflict.

The Imperative for Safety

Captain Parsons understood the imperative for safety. Nuclear weapons in the early years were dangerously unstable, and much of what was known about the actual events during the implosion was based on theory and a few experiments. An accident involving a nuclear warhead could lead to thousands of unintended combat or peacetime casualties. Since 1950, there have been over thirty accidents involving nuclear warheads; fortunately, and largely due to safety procedures and weapons design, most were relatively minor in scale.[3] Even today, safety of the nuclear warheads remains a critically important criterion in the development, maintenance, and daily operations of the nuclear force. It is Defense Department policy that all nuclear weapons shall incorporate positive measures to prevent them from producing a nuclear yield in the event of an accident or incident, including the possibility of a weapon being jettisoned.[4]

Safety measures must guard against two considerations: technical malfunctions or failures of components or subsystems within the weapon or delivery system; and human error.[5] However, safety precautions can often mean a reduction in readiness. For example, one early method to ensure safety of nuclear bombs was to physically separate the nuclear components from the rest of the bomb, combining them and arming the weapon only when actually required. Early bombs used a manual In-flight Insertion and In-flight Extraction (IFI/IFE) method, which posed additional safety concerns; some later weapons had an automatic IFI/IFE process. However, the imperative for increased responsiveness and reliability soon overshadowed this safety procedure. In the mid-1950s, "sealed-pit" weapons, which contained the nuclear material as an integral part of the system, were introduced, and by early 1963, they comprised the majority of nuclear weapons in the US arsenal.[6] Since sealed-pit weapons are considered "constantly ready," they have their own unique safety considerations: Nuclear safety was achieved in sealed pit systems by finely balancing the quantities of fissile and high-explosive materials so that a nuclear yield could not result if the explosives were accidentally ignited. This approach achieved "one-point safety." That is, an accidentally dropped warhead, or one exposed to a fire as in an aircraft crash, would, if detonated, produce no significant yield…. With a well-designed and tested one-point safe nuclear system, all safety and control features could be satisfied by adequate electrical system design.[7]

Another example demonstrates the balance between safety and readiness in the strategic nuclear missile force. The first generation of intercontinental ballistic missiles, including the Atlas and Titan, used liquid fuel so volatile that it could not be stored within the missile. The maintenance crews would have to undertake a complex and delicate fueling procedure before the missile would be ready for operations; should it not be fired, all the fuel had to be drained out to reduce the risk of explosion. These necessary safety precautions meant it could take over an hour before the force could respond to an enemy strike. Using such volatile liquid fuels was clearly not acceptable, and within several years the safer and more responsive solid-fueled Minuteman and Polaris missiles replaced the dangerous Atlas and Titan missiles.[8]

In both of these examples, the tension between safety and readiness was resolved through improvements in technology that fortunately resulted in both greater safety and improved readiness. Some situations, however, are not so

favorably resolved. In many cases, the human factor cannot be as easily controlled. Human involvement in an activity always brings an inherent safety risk; stress-induced pressures in training or combat can increase the likelihood of human error and accident.

The constant training, exercises, and maintenance procedures that are inherently a part of readiness for combat can dramatically increase the risk of an accident, despite safety precautions. Most safety-related events involving nuclear weapons are a result of aircraft accidents engaged in training missions, including the highly publicized incident in January 1965 involving the mid-air collision of a KC-135 tanker and a B-52 bomber with four nuclear weapons near Palomares, Spain. Only two of the bombs were recovered, and 1400 tons of contaminated soil had to be removed after a non-nuclear explosion spread radioactive debris. [9] Although the Department of Defense had previously decided to eventually discontinue airborne alerts of the B-52 bomber force, the safety implications arising from this accident contributed to the cancellation of the program. [10]

The Imperative for Security

The security of nuclear weapons is equally important. Their destructive power is so great that the consequences of unauthorized use are almost unthinkable. One concern is the threat from sabotage or terrorism; therefore the Departments of Defense and Energy have established comprehensive security procedures and security response forces at nuclear weapon facilities and operational bases, along with methods for evaluating their effectiveness. Retired Air Force General Chris Adams described these methods at Strategic Air Command (SAC):

To stimulate consistent interest and awareness, SAC operated a security evaluation system. The system's two-phased approach utilized a specially trained team whose mission was to surreptitiously breach a unit's security measures. These teams used false identifications and false orders, picture badges with photos other than the wearers' photos inserted, and other creative schemes to "get inside" a secure area. …

The second phase of these evaluations included complete audits of security procedures, inventories of classified materials, and tests (both oral and written) for personnel having responsibility for maintaining documents and/or systems security. The system seldom failed beyond an occasional administrative mishap. [11]

Security procedures and considerations against the threat of sabotage and terrorism do not generally affect the responsiveness of the active force; arguably, they may serve to increase the readiness by instilling in the minds of the personnel manning the weapons the seriousness of their duties. Two other concerns, however, have a direct impact on readiness: deliberate actions that could lead to a planned but unauthorized detonation of a nuclear device, and inadvertent actions that could lead to an unplanned detonation.

President Harry S. Truman was among the first to recognize that nuclear weapons were more than just another bomb, and that the decision to employ them must be made carefully by a competent political authority. Dropping a nuclear bomb was a political statement more than a military activity, and he did not want "to have some dashing lieutenant colonel decide when would be the proper time to drop one." [12] Therefore, he placed the custody of all nuclear weapons under the Atomic Energy Commission (AEC) and mandated that only by presidential order could they be transferred to the military. [13] While ensuring positive control, this decision had enormous implications for the readiness and responsiveness of the force. In 1947, General George C. Kenney, the Commanding General of the Strategic Air Command, noted: "The VHB [Very Heavy Bomber] groups of the Strategic Air Command are now capable of taking off … within a few hours after an order to do so is received; but if the atomic bomb is used the takeoff might be delayed, by factors beyond the control of the Air Force…." [14]

The decision to deploy B-29s to Europe at the beginning of the Berlin Crisis in 1948 demonstrated the implications of ensuring the security of nuclear weapons by having them in AEC custody. Although not of the type modified to carry nuclear weapons, the B-29s were deployed to send a message to the Soviet Union that nuclear weapons could be used to protect American interests in Europe. However, neither the AEC nor Eighth Air Force was prepared to transfer custody or transport the weapons to Europe. The turmoil surrounding the deployment underscored the need for better planning and eventually led President Dwight D. Eisenhower to authorize the military to have custody of nuclear weapons in peacetime in order to increase operational readiness. [15]

By the late 1950s, the pendulum had started to swing in the other direction. While the military was pleased with custodianship, civilian authorities and observers began to examine the possible consequences. In 1958, Fred Ikles of the RAND Corporation suggested that "combination locks" be installed on nuclear weapons to prevent unauthorized or accidental detonations. Likewise, scientists like John Foster at Lawrence Livermore Laboratory and Harold Agnew at Los Alamos Laboratory were arguing for increased safety and control measures. By the early 1960s, procedural and physical restraints were established that reinstated a higher level of control on the use of nuclear weapons.

These procedural and physical restraints were based upon the concept

of never allowing a single individual to have the ability to launch a nuclear weapon. At least two, and often a significant number, of predetermined individuals were required to conduct certain activities, usually in a specified sequence, in order to make a nuclear weapon ready for use. Some of the procedures were simple but effective, such as establishing a "no-lone zone" around nuclear weapons, thus assuring that all sensitive activities such as maintenance and arming are not accomplished by a single individual but rather by two with the same level of authority and training. [16] Other procedures are more complex, such as those required to launch Sea-Launched Ballistic Missiles, which involve reading the launch message to the entire crew, having it confirmed by two sets of officers (not including the commanding officer, weapons officer, or navigation officer), issuing special keys which themselves permit the closing of switches in a proscribed sequence, thus arming and launching the weapon. [17]

Mechanical and electro-mechanical devices also help ensure the security of nuclear weapons. Early and simple ones included simple sets of standard combination locks, the combinations of which were held by two separate individuals. However, the most common and secure device is the Permissive Action Links (PAL), which came into widespread use following the issuing of National Security Action Memorandum 160 by the Kennedy Administration in 1962. PALs are electro-mechanical devices that lock the warhead in an inert status and only allow it to be unlocked through two sets of codes, each held by a different individual. [18] The PALs incorporated into the nuclear warheads are designed in such a way that any attempt to bypass them will simply disarm the weapon. [19]

These physical and procedural restraints on nuclear weapons impose limitations on the readiness of the strategic nuclear force, and to a certain extent the ability to carry out a launch order. First, these procedures, including the unlocking of any PALs, take time. Yet time is the one luxury a nuclear conflict does not permit. The intelligence community may offer some level of strategic warning, which permits some advance preparations or preliminary discussions on response and employment options. However, tactical warning of a strategic nuclear attack may provide less than thirty minutes in which to make and carry out a launch decision. Should the president delay in his decision, or any of the intermediary commands delay in their issuing of launch orders, bomber crews may not take off in time and missile crews may not launch in time to avoid destruction in the first wave of strikes. Second, should the crews insert the wrong codes (perhaps over nervousness) more than a specified number of times, some PALs will lock up and prevent further use, even with the proper codes, thereby rendering the weapon useless in conflict. [20] Third, great thought must be given to the distribution of the codes. Too wide a distribution will undermine security; too restricted will undermine survivability and responsiveness. [21]

One important consideration, however, is that military forces retain the full physical ability to launch nuclear weapons—civilian authorities do not retain any of the keys or codes that are used to unlock and enable nuclear detonation. Although the president and defense secretary have nuclear launch codes (carried by their military aides), these codes are used to authenticate the user's identity rather than used to actually unlock the PALs or initiate an arming sequence. The launch authorization codes are actually kept in certain military command centers and disbursed throughout the strategic nuclear force in accordance with set procedures to ensure they would only be used when authorized. [22]

Clearly, another key aspect of ensuring safety and security (and, conversely, readiness) is ensuring that the individuals entrusted with the operational security and employment of nuclear weapons are reliable and responsible. There are three aspects to this consideration. First, these individuals must be highly trained and constantly tested to ensure the possibilities for human error in the security realm are reduced to a minimum. Second, these individuals must be mentally sound and psychologically and professionally reliable to ensure they will not deliberately detonate a nuclear weapon without authorization. In other words, eliminate those individuals who may "go crazy and launch a nuke," or those when in combat may launch a nuclear weapon without authorization when faced with an unfavorable tactical situation. Third, these individuals must be mentally sound and psychologically and professionally reliable to ensure they will detonate a nuclear weapon when so ordered. In this case, eliminate those individuals who, despite their training, may hesitate or refuse to carry out a lawful order because of a concern of the awesome consequences of their actions.

The Department of Defense implemented the Personal Reliability Program (PRP) [23] as a method for evaluating the reliability and responsibility of those individuals in the security and employment of nuclear weapons. This program includes psychological testing, mental health evaluations, and interviews with commanding officers. Retired General Russell E. Dougherty, former Commander in Chief of Strategic Air Command, outlined his perspective: "No one in the nuclear commands has an inherent 'right' to be entrusted with nuclear weapons responsibilities; those who are assigned such duties must meet a high standard of 'human reliability.'… Deviations from these standards, or aber-

rant personal behavior, will result in further, immediate scrutiny, and probably removal from nuclear weapons duties." [24]

The imperative for security is included within the current Department of Defense policy: "There shall be positive measures to prevent deliberate prearming, arming, launching, or releasing of nuclear weapons, except upon execution of emergency war orders or when directed by competent authority…. There shall be positive measures to prevent inadvertent prearming, arming, launching, or releasing of nuclear weapons in all normal and credible abnormal environments. [25]

The Imperative for Readiness

Deterrence works because adversaries believe the United States has both the will and capability to respond to a nuclear attack with its own nuclear strike. That capability rests upon bombers and missiles constantly poised for action, while the will rests upon the belief that should the president give the order for a nuclear strike, it can and will be carried out. Together, these components drive an imperative for readiness.

As mentioned, Truman established the policy that only the president can authorize the use of nuclear weapons. But what if the president is unable to do so? Eisenhower recognized that such limited control undermines the readiness of the strategic nuclear force, and he apparently delegated "discretionary release authority" to the commanders of selected major commands, such as Air Defense Command, Strategic Air Command, and others (although the evidence is sketchy). In the event of a nuclear conflict, when response time is limited and the president was for some reason out of communication or unable to authorize a response, these commanders had the authority to launch defensive or retaliatory strikes.[26]

The Kennedy administration took a dim view of this authority and the general loosening of restrictions on the employment of nuclear weapons that had taken place during the Eisenhower era. As mentioned, the widespread use of PALs and procedural controls were implemented beginning in 1962. The military initially saw these requirements as detrimental to readiness, but eventually accommodated their use and viewed them as increasing stability, security, safety, and, by mandating procedural actions, responsiveness.

The human component remains critical in ensuring readiness, as well. As mentioned, the Personal Reliability Program is designed to also ensure individuals involved in the employment of nuclear weapons are mentally sound and psychologically and professionally reliable to ensure they will detonate a nuclear weapon when so ordered. General Dougherty was subject to criticism from the media when he discharged an officer who, when questioned during the Personal Reliability Program interviews whether he would launch nuclear missiles, always qualified his statement with personal reservations. This officer was technically competent, operationally savvy, and otherwise highly professional, but Dougherty could not allow him to impose his own criteria on the employment of nuclear weapons. [27] Frequent realistic exercises help ingrain into these bomber crews and missile launch officers the trust that properly authenticated orders should be carried out without hesitation.

Since the early 1990s, the United States has gradually decreased the readiness of its strategic nuclear force without decreasing its ability to launch a strike, if needed. Few bombers sit alert today, and missiles are reportedly not aimed at any targets in the Russian Federation. But the command and control structure, operational procedures, and security devices in place still permit the ability to respond to a strike under tactical warning. But the tension between security and readiness remains. One area in which this is evident is the concept of "de-alerting."

De-alerting is defined as removing the nuclear warhead from the missiles and physically separating them so that it would take hours or days to reconstitute and rearm them. Proponents of the concept argue that it will significantly increase security and stability because it would reduce the readiness of the strategic nuclear force: "move nuclear forces off hair-trigger, launch-on-warning status, and thus make an 'accidental launch' scenario highly unlikely." [28] Having a "force-in-being" preserves the concept of deterrence, but having the warheads separated from the missiles creates a delay in retaliation that assures more reliable and safe control. [29] However, opponents sees a "zero-alert" status as inherently destabilizing simply because the desire for greater security (and safety) decreases the readiness of the force. In times of increased international tensions, nuclear powers would be inclined to increase the readiness of their nuclear forces by taking steps to "remate" the warheads and missile in order to be sure not to be caught off-guard by a surprise attack. However, the very action of remating the weapons would cause the opposing side to take the same actions, escalating the confrontation. [30]

Conclusion

There for a while it looked like Deke Parson's precautions with Little Boy were going to be necessary. Colonel Paul Tibbets held the overweight B-29 on the runway as long as he could, trying to build up enough speed to lift the plane and its special payload into the air. Captain Robert Lewis, the copilot, couldn't help but reach for the controls as he saw the end of the runway and the dark waters of the Pacific rushing toward him. Lewis, along with other members of the crew, thought they would run out of

runway, their mission ending in a burning fireball before it really got started. At the last moment, Tibbets pulled back on the wheel, lifting the Enola Gay into the sky. It was 2:45 in the morning, August 6, 1945, and the first mission of the atomic age. [31]

The imperatives of safety, security, and readiness for nuclear weapons create a never-ending tension, the considerations of each having to be weighed with the others. Resolution of these imperatives can create stability and support deterrence, or they can create instability and promote crisis. This tension is exacerbated during times of nuclear confrontation and conflict, when the decision to employ strategic nuclear weapons adds pressures to the compromises that have been made during peacetime.

(Endnotes)

[1] Peter Wyden, Day One: Before Hiroshima and After (New York: Simon and Schuster, 1984), 241-242.

[2] DODD-3150.2, DoD Nuclear Weapon System Safety Program, 23 December 1996, downloaded from on 3 March 2002.

[3] Chuck Hansen, U.S. Nuclear Weapons: The Secret History (New York: Orion Books, 1988), 227-229.

[4] DoD Nuclear Weapon System Safety Program, 23 December 1996.

[5] Donald R. Cotter, "Peacetime Operations: Safety and Security," in Ashton B. Carter, John D. Steinbruner, and Charles A. Zraket, editors, Managing Nuclear Operations (Washington, DC: The Brookings Institute, 1987), 42.

[6] Hansen, 110, 226-227

[7] Cotter, 43.

[8] Jacob Neufeld, The Development of Ballistic Missiles in the United States Air Force, 1945-1960, General Histories Series (Washington, DC: Office of Air Force History, 1990), 213-214.

[9] Hansen, 229.

[10] Cotter, 29.

[11] Chris Adams, Inside the Cold War: A Cold Warrior's Reflections (Maxwell Air Force Base, Alabama: 1999), 99-100.

[12] Walter Millis, editor, The Forrestal Diaries (New York: The Viking Press, 1951), 458.

[13] Walton S. Moody, Building a Strategic Air Force (Washington, DC: Air Force History and Museums Program, 1996), 126-127.

[14] Ibid, 170.

[15] Richard Collier, Bridge Across the Sky: The Berlin Blockade and Airlift, 1948--1949 (New York: McGraw-Hill Book Company, 1978), 67-68; Moody, 214-215; and Richard A. Paulson, The Role of Nuclear Weapons in the Post-Cold War Era (Maxwell Air Force Base, Alabama: 1994), 4.

[16] Cotter, 50.

[17] Ibid., 52.

[18] Cotter, 47-49.

[19] The Harvard Nuclear Study Group, "How Might A Nuclear War Begin?", in C.W. and E.R. Wittkopf, editors, The Nuclear Reader's Press, 1989), 265.

[20] Cotter, 49.

[21] Ibid., 51.

[22] Bruce G. Blair, The Logic of Accidental Nuclear War (Washington, DC: The Brookings Institute, 1993), 50-51.

[23] Sometimes known as the Human Reliability Program.

[24] Russell E. Dougherty, "The Psychological Climate of Nuclear Command, in Ashton B. Carter, John D. Steinbruner, and Charles A. Zraket, editors, Managing Nuclear Operations (Washington, DC: The Brookings Institute, 1987), 413.

[25] DoD Nuclear Weapon System Safety Program, 23 December 1996.

[26] Blair, 46-52.

[27] Dougherty, 414.

[28] Robert A. Manning, "The Nuclear Age: The Next Chapter," Foreign Policy, Winter 1997/1998, 83

[29] Bruce Blair and Leon Sloss, "Avoiding Launch on Warning," in Hans Binnendijk and James Goodby, editors, Transforming Nuclear Deterrence (Washington, DC: National Defense University Press, 1997), 18.

[30] Ibid., 19-20.

[31] Gordon Thomas and Max Morgan Witts, Ruin From the Air: The Enola Gay's Atomic Mission to Hiroshima (Chelsea, Michigan: Scarborough Publishers, 1990), 301-303.

The Four Elements:

Creating the Foundations of US Strategic Nuclear Policy

by Maj Michael J. McCarthy

The development of the strategic nuclear policy of the United States over the past fifty years has been evolutionary rather than revolutionary. Since the late 1940s, the policy has been based upon the premise that the primary role of nuclear weapons is deterrence—to deter an enemy from threatening the United States with its own nuclear weapons. The implementation of that policy has changed, as will be described below, but generally only in an evolutionary way, based upon historical legacy, the desires of the political and military leaders, and the circumstances of the national security situation. That implementation can be tracked through the evolution of the nuclear strategy and the development of strategic nuclear forces.

There are four key elements of our current policy of nuclear deterrence: recognition of the political and diplomatic aspects of nuclear weapons; a declared, comprehensive, and deliberated policy; a credible warfighting capability; and a viable target base (and a detailed understanding of the targets) to hold at risk. All four of these elements were in place by the end of the Kennedy administration. While there are many important and even critical events that shaped our nuclear policy over the past fifty years, there is one that stands out beyond all others: the Cuban Missile Crisis of 1962. These four elements were solidified following the Cuban Missile Crisis and together formed the foundation of today's US strategic nuclear policy. While administrations since Kennedy's have changed how the policy is implemented, none have significantly altered or abandoned the policy of deterrence, or modified any of its fundamental elements.

Nuclear Policy under Truman

President Harry Truman, who authorized the use of the atomic bomb against Japan, provided little guidance and policy for their use in the post-war era. Little was necessary at this point—the US had very few weapons and only a limited ability to employ them, and the Soviet Union had none, and virtually no ability to threaten the United States with conventional forces. Truman essentially saw nuclear bombs as terror weapons, to be used only as a last resort.[1] He did, however, vaguely comprehend their value as a deterrent force in conventional conflicts. Truman authorized the deployment of B-29 bombers to Europe at the beginning of the Berlin Blockade as a way of demonstrating to the Soviet Union that military action against the airlift would be met with an atomic strike.[2] He also implied that atomic weapons could be used in Korea should the military situation deteriorate. Both of these efforts ultimately backfired: the B-29s sent to Europe had no ability to drop nuclear weapons, and the Soviet Union probably knew that; and the statement that atomic weapons might be used in Korea was almost immediately retracted.[3]

Truman did initiate one key element of deterrence policy—civilian control over the employment of nuclear weapons. He placed the weapons under the physical control of the Atomic Energy Commission (a policy that would later be rescinded by President Eisenhower) and he dictated they would never be used without presidential approval. In his words, he did not want "to have some dashing lieutenant colonel decide when would be the proper time to drop one."[4] This policy recognized and acknowledged the political and diplomatic aspects of nuclear war, and it is critical to an effective deterrence policy. Adversaries must know and understand that we view and treat nuclear weapons differently than conventional weapons, and their use implies a much greater political and military confrontation. Nuclear weapons are not simply a bigger bomb to be used by military commanders as they see fit; they are the weapons of last resort, used when political leaders feel the security and existence of the nation are at risk. It also implies that resolution of a nuclear conflict, impending or ongoing, requires greater diplomatic efforts under greater pressures and time constraints. While the concept was original conceived under Truman, it more fully developed under later administrations. Nonetheless, this critical element of our deterrence policy has remained constant throughout the last half century.

In the absence of any comprehensive national policy on the employment of nuclear weapons, the Air Force, the only service with the ability to deliver nuclear weapons, began developing its own employment strategies based on its perceived successes with the strategic bombing campaigns of World War II. During the 1930s, faculty members at the Air Corps Tactical School had developed the American theory of strategic bombardment. This theory included specifically targeting key industrial and economic targets rather than deployed military forces to render the adversary with neither the will nor the ability to continue fighting. The apparent success of this theory, coupled with the lack of reliable information on Soviet military forces, meant early nuclear war plans targeted urban and industrial areas.

Joint Emergency War Plan HALFMOON, issued in 1948, was a prime example of this early "countervalue" targeting strategy. HALFMOON had both an atomic and a conventional component designed to "initiate as early as practicable an air offensive against vital elements of the Soviet war-making capacity."[5] Atomic bomb-equipped units (at the time, only the 509th Composite Group) would strike the approximately twenty cities in the Soviet Union which contained the largest share of war-supporting industry, while conventionally-equipped B-29 units would strike oil targets and port facilities and lay mines in Soviet ports, waterways, and shipping lanes.[6]

Since the administration and the military saw nuclear weapons as simply a bigger bomb with some inherent threatening value, it was left to the academic community to seriously examine the fundamental nature of these weapons and their effect on national security policies. The first academic to address this issue was Professor Jacob Viner of the University of Chicago, who in September 1945 recognized the vast difference between conventional and atomic weapons. Knowing that other nations would eventually have such weapons, he postulated that they would cease to have any military utility other than for deterrence: "Retaliation in equal terms is unavoidable and in this sense the atomic bomb is a war deterrent, a peace-making force."[7] The following year, Bernard Brodie summed up the essence of the issue: "Thus far the chief purpose of our military establishment has been to win wars. From now on its chief purpose must be to avert them. It can have almost no other useful purpose."[8] This thought would serve as the backbone of the deterrence policy for the next fifty years.

Nuclear Policy under Eisenhower

Unlike Truman, President Eisenhower recognized the need to formulate and promulgate a declared policy on the use of nuclear weapons. His policy was Massive Retaliation, in which the initiation of conventional conflict by the Soviet Union would bring an instant nuclear response. Like Truman, Eisenhower recognized the value of nuclear weapons as a deterrent against conventional wars, and Massive Retaliation was designed to prevent the initiation or escalation of conventional conflicts.[9] It was also intended to deter the Soviet Union from engaging in a nuclear conflict—Massive Retaliation made that option foolhardy.

Eisenhower's strategy, developed in 1953 and codified in NSC-162/2, was based on "a strong military posture, with emphasis on the capability of inflicting massive retaliatory damage by offensive striking power." His Secretary of State, John Foster Dulles, made the policy public in 1954, stating "The way to deter aggression is for the free community to be willing and able to respond vigorously at places and with means of its own choosing," and those means "was to depend primarily upon a great capacity to retaliate, instantly."[10] Massive Retaliation was the first declared policy describing the potential use of nuclear weapons.

A declared, comprehensive, and deliberated policy is a critical element of an effective deterrence strategy, because first, it lets our adversaries know that we do intend to deter them from certain actions (deterrence has no meaning unless the adversary knows you are doing it); and second, it demonstrates to the adversary seriousness of our intentions. Although many disagreed with the policy of Massive Retaliation, few disagreed with the desire to deter the Soviet Union from military adventurism, and no one disagreed with the desire to let the Soviet leadership fully and completely understand our intentions. There is considerable debate over specific issues and some policy deliberations and decisions remain classified and therefore not publicly released. However, since the early 1950s the United States has always had a declared, deliberated policy on the use of its nuclear weapons within the construct of deterrence.

Eisenhower recognized that for his policy of Massive Retaliation to have any credibility, a powerful striking force and the willingness to use it must back it. While it is difficult to demonstrate willingness, it is not difficult to demonstrate latent power. In a buildup that began at the end of the Truman administration and continued unabated throughout the Eisenhower presidency, the military (and in particular the Air Force) developed an awesome capability to wage nuclear war on a global scale. The inventory of nuclear warheads grew from 1,000 in 1953 to 18,000 in 1960, the yields increased to the megaton range, ballistic missiles were operationally deployed, tactical nuclear weapons came under development, and nuclear weapons became operational within the Navy and eventually the Army.[11]

The increasing size and complexity of the US strategic nuclear arsenal brought with it additional problems. Prior to 1960, each theater commander developed his own target lists for nuclear strikes, yet even with some coordination between the commanders, these lists often contained duplicate entries. The establishment of the Joint Strategic Target Planning Staff (JSTPS) and the integration of all target lists into the Single Inte-

grated Operational Plan (SIOP) alleviated this duplication and allowed for more effective planning of the growing nuclear arsenal.[12] The culmination of this effort was the first national-level strategic nuclear war plan—SIOP 62.

As impressive as the planning effort was, however, SIOP-62, illustrated the ultimate folly of Massive Retaliation. It contained only one option—launching all strategic nuclear weapons at the beginning of any nuclear war, effectively destroying every major Soviet, Chinese, and allied city, and killing up to 425 million people. There was no distinction between military and urban/industrial targets—both were hit during the initial strike, and there was no provision for reserves.[13]

Having the ability to attack an enemy is important; knowing what to attack is equally important. A critical element of the policy of deterrence as it developed was the ability to hold at risk a viable set of targets within the Soviet Union. While strategic planners implicitly knew that the Soviet Union, as an industrialized nation, had manufacturing, electrical, chemical, transportation, and oil facilities and systems that would make excellent targets, they had little detailed information on how many or where they were. Until the Eisenhower administration, most of the intelligence on the Soviet Union came from the interrogation of thousands of German soldiers who had been captured by the Soviet Union and eventually repatriated, captured German aerial photographs from World War II, out-of-date maps (some from the czarist era), and the observations of the occasional tourist or business traveler.[14] But the Air Force required detailed, current, encyclopedic knowledge of the Soviet political, economic, social, and military infrastructures if it was going to be able to conduct nuclear strike operations. This pressing need led to the development of the U-2 and the overflight program, imagery and signals intelligence satellites, and a huge national intelligence community system. The ultimate result of these collection programs was a detailed understanding of the Soviet structures, which could then be developed into target databases, which could then be used in war plans.

Nuclear deterrence was a viable strategy against the Soviet Union (and against lesser adversaries, such as China), because there was a set of targets that could be held at risk that were important enough to the continued existence of the Soviet state that the Soviet leadership was not willing to risk conflict. Despite their extensive efforts at camouflage, concealment, deception, and civil defense, the Soviet leadership knew that a nuclear exchange would be more costly than they could bear. This element is crucial to the effectiveness of a nuclear deterrence policy, and one reason why nuclear deterrence is not usually viable against a non-state organization such as a terrorist group.

Also during the Eisenhower administration, the targeting strategy for nuclear strikes began to shift once the Soviet Union developed a capability to strike the United States with nuclear weapons delivered by long-range bombers. These forces now topped the list of targets in the Soviet Union, with the intent of "blunting the enemy's initial threat."[15] While this was the beginning of a counterforce strategy, there was little concern over any first-strike capability, as both sides would require up to 30 days to deliver a nuclear attack.[16]

Nuclear Policy under Kennedy

By the early 1960s, the four key elements of a deterrence policy were in place: recognition of the political and diplomatic aspects of nuclear weapons; a declared, comprehensive, and deliberated policy; a credible warfighting capability; and a viable target base (and a detailed understanding of the targets) to hold at risk. All four continued to evolve, but their content remained consistent.

Seeing the Massive Retaliation policy as too rigid and unworkable, and therefore unrealistic, the Kennedy administration adopted a new deterrence policy: Flexible Response. This policy had a number of distinct features:

- China and the satellite countries were separated from the USSR for targeting purposes.
- Soviet strategic forces were separated from Soviet cities on U.S. target lists.
- Strategic reserves were to be held by the US in accordance with the concept of intra-war deterrence [deterring a second or third strike].
- US command and control systems were to be protected to allow "controlled response."
- Soviet command and control was to be preserved, at least in the initial stages of any nuclear conflict.[17]

The Kennedy administration also flirted with the concept of exclusive counterforce targeting (attacking only the Soviet strategic forces, while deliberately sparing the cities), but backed off after it became clear that this policy would raise concerns about a first-strike capability. Kennedy implemented Flexible Response early in his administration, and most of the essential planning had been completed by the time the Soviet Union introduced missiles into Cuba in the fall of 1962.

The Cuban Missile Crisis proved to be one of the pivotal

moments of Cold War history, and essential to understanding the development of strategic nuclear deterrence. The details of the crisis do not need to be repeated here. What is important is the aftermath—the effects of the crisis on strategic nuclear policy.

During the crisis, both American and Soviet leaders understood that the confrontation in Cuba, should it lead to military conflict, would likely lead to a nuclear exchange. Millions would be killed on both sides, and both countries and a good portion of the rest of the world would suffer the effects for generations. While deterrence was only credible if one side recognized the other was willing to use nuclear weapons, the "brinksmanship" that went with this confrontation brought the world uncomfortably close to nuclear war. Some efforts had to be made to control situations, so that deterrence did not become a way to start wars rather than a way to stop them.

The soberness experienced by both sides in the aftermath of the crisis led to specific practical steps that would serve to strengthen deterrence. The first of these was the establishment of a teletype hotline between the White House and the Kremlin giving them a dedicated, instantaneous, and relatively secure means of communication in the event of a similar crisis, thereby permitting joint diplomatic efforts instead of nuclear strikes to resolve confrontations. The second was the establishment of fail-safe devices, known as permissive action links, on U.S. nuclear weapons to ensure they could not be used without an input from the National Command Authorities. The third was a treaty that prohibited tests of nuclear devices in the atmosphere, in the sea, or in outer space. The fourth was an effort for nuclear disarmament that, while unsuccessful, set the stage for future arms limitation and reduction agreements.[18]

The Cuban Missile Crisis changed the relationship between the US and the USSR with regard to nuclear deterrence. No longer could the US assume a position of strategic superiority—instead, there was relative nuclear parity. And both sides recognized that the risks and results of nuclear war were too high to unnecessarily challenge the policy of deterrence.

Nuclear Policy since Kennedy

By the mid-1960s, the essential elements of deterrence policy were in place, and subsequent administrations made changes only within the accepted context of these elements. All continued to accept that nuclear weapons have a unique political and diplomatic aspect; improvements to command and control systems can be seen in the light of increasing positive control, and the series of strategic arms limitation and reduction agreements underscore the political and diplomatic dimensions of these weapons. All presidents have either adopted the declared policy of their predecessor, such as Johnson, or implemented their own, such as Nixon, but these policies were simply variations on the theme of deterrence. All have continued to insist on a strong, responsive offensive force to provide credibility to their policies; even the massive reductions taken under the Bush and Clinton administrations were done so with an eye toward maintaining capability and in some cases modernizing elements of the force. The most recent DOD policy expands that concept to include non-nuclear strategic capabilities and active and passive defenses within the military force designed to deter adversaries.[19] And all administrations have recognized that deterrence always depends on finding and holding at risk that which the adversary holds dear.

Conclusion

The strategic nuclear policy of the United States has developed in an evolutionary rather than revolutionary manner. Although not always overtly declared, since the late 1940s the policy has been based upon the premise that the primary role of nuclear weapons is deterrence. The implementation of that policy has changed, but also in an evolutionary way, based upon historical legacy, the desires of the political and military leaders, and the circumstances of the national security situation. And by the mid-1960s, the essential elements of deterrence policy were in place, and subsequent administrations made changes only within the accepted context of these elements. These four key elements—recognition of the political and diplomatic aspects of nuclear weapons; a declared, comprehensive, and deliberated policy; a credible warfighting capability; and a viable target base (and a detailed understanding of the targets) to hold at risk—along with the Cuban Missile Crisis of 1962 illustrate the evolutionary nature of the US strategic nuclear policy. While administrations since Kennedy's have changed how the policy is implemented, none have significantly altered or abandoned the policy of deterrence, or modified any of its fundamental elements.

(Footnotes)

[1] David Alan Rosenberg, "U.S. Nuclear War Planning, 1945-1960," in Strategic Nuclear Targeting, edited by Desmond Ball and Jeffrey Richelson (Ithaca, NY: Cornell University Press, 1986), 38.

[2] Kenneth W. Condit, The Joint Chieof

Staff and National Policy, Volume II, 1947 – 1949, History of the Joint Chiefs of Staff Series (Washington, DC: Office of Joint History, 1996), 69.

[3] William Taubman, Stalin's American Policy: From Entente to Détente to Cold War (New York: W. W. Norton and Company, 1982), 194; and Robert Cecil, A Divided Life: A Personal Portrait of the Spy Donald Maclean (New York: William Morrow, 1989), 75, 82-83; and James F. Schnabel and Robert J. Watson, The Joint Chiefs of Staff and National Policy, Volume III, 1950-1951, The Korean War, Part One, History of the Joint Chiefs of Staff Series (Washington, DC: Office of Joint History, 1998), 155.

[4] Walter Millis, editor, The Forrestal Diaries (New York: The Viking Press, 1951), 458.

[5] "Brief of Short Range Emergency War Plan (HALFMOON)" in Containment: Documents on American Policy and Strategy, 1945 – 1950, edited by Thomas H. Etzold and John Lewis Gaddis (New York: Columbia University Press, 1978), 315-323.

[6] Ibid.; and Walton S. Moody, Building a Strategic Air Force (Washington, DC: Air Force History and Museums Program, 1996), 198-200.

[7] Theodore Draper, "Nuclear Temptations: Doctrinal Issues in the Strategic Debate," in The Nuclear Reader, edited by C.W. and E. R. Wittkopf (New York: St Martin's Press, 1989), 25-26.

[8] Ibid., 26.

[9] Richard A. Paulson, The Role of US Nuclear Weapons in the Post-Cold War Era (Maxwell Air Force Base, Alabama: Air University Press, 1994), 4.

[10] Ibid.

[11] Paulson, 5-8.

[12] Paulson, 8; and Charles K. Hopkins, Unclassified History of the Joint Strategic Target Planning Staff (JSTPS) ([Offutt Air Force Base, Nebraska: Office of History, Joint Strategic Target Planning Staff], 1990), 1-4.

[13] Desmond Ball, "The Development of the SIOP, 1960-1983," in Strategic Nuclear Targeting, edited by Desmond Ball and Jeffrey Richelson (Ithaca, NY: Cornell University Press, 1986), 62.

[14] Rosenberg, 39-40.

[15] Rosenberg, 44.

[16] Ibid.

[17] Ball, 63.

[18] John Sharnik, Inside the Cold War: An Oral History (New York: Arbor House, 1987), 160; and Louis J. Halle, The Cold War as History (New York: Harper & Row, Publishers, 1967), 411; and Martin Walker, The Cold War: A History (New York: Henry Holt and Company, 1993), 179.

[19] "Nuclear Posture Review Report," by Secretary of Defense Donald H. Rumsfeld, January 10, 2002, downloaded from www.defenselink.mil on February 21, 2002.

"Everything is very simple in war, but the simplest thing is difficult. These difficulties accumulate and produce a friction which no man can imagine exactly who has not seen war."

Karl von Clauswitz

How Joint?

by Maj Richard White

Prior to 1986, the question was why couldn't the military services cooperate jointly? The lessons of Operation EAGLE CLAW, the aborted attempt to rescue American hostages in Iran, and Operation URGENT FURY, the embarrassing U.S. invasion of Grenada, were abject lessons of the need for change. Convinced that these cases were exceptions, that the same organizational structure that fought and won World War Two was fundamentally sound and necessary to face down the Soviets in a potential World War Three scenario, the DoD did little to effect change. Congress, looking at the military record since WW II, felt differently: Korea, draw; Vietnam, loss; Iran, failure; Grenada, mess. Since DoD failed to solve the problem internally, Congress enacted the Goldwater-Nichols Act forcing an external solution on the DoD. The results seemed to speak for themselves: Panama, win; Gulf War, win; Kosovo, win; Afghanistan, win. Now some argue the military's become too joint, endangering the service cultures and traditions that have made the U.S. armed forces the most formidable in the world. Others cite on-going budget battles and say the services still haven't gone far enough. The question then is how joint can the military become? What is the most effective mix of military capability and how can it be achieved?

The answer is that military forces can never become fully joint. There will never be 100% integration. Congress can mandate a single military department and issue every service member a purple uniform, and the problem will still persist. Why? The answer is specialization. So long

as there are different forms of warfare, i.e., land, sea, air, space, and information, we will need warrior specialists with mastery of their particular medium. Because of the complex nature of each, it's unreasonable to expect every member to master them all. Is this necessarily bad? The answer is no. The basic idea behind jointness is to use "the right tool for the right job." It does no good if your tools are blunt or rusty. We want our military forces, to borrow an old Army slogan, "to be the best they can be." Does that mean we endanger each service's core competencies by forcing them closer together; is it possible to become too joint?

The answer to this last question is "no," the military can't become "too joint." Battle commanders will always defer to their weapon systems experts before making a decision. There will always be different shades of purple. Can they still get close enough to drown individual service cultures and traditions? Will a purple culture emerge, become pre-eminent, and wash out the green, white, blue, and brown? The answer is "maybe." But "maybe" isn't a bad thing.

First of all, let's examine what we mean by a "service culture." A service culture is a patterned way of thinking perpetuated by the organization. The pattern serves as a template for success, the central philosophy a surer path to promotion. Today's Army culture is centered on armor, the Navy is built around the aircraft carrier, the Air Force focused on the "fighter mafia", and the Marines are still "Semper Fi". The problem with service cultures is that they're difficult to change. Success breeds complacency: people who succeed within the system and rise to the top tend to view the system as good, after all, it produced them! Compounding the difficulty of change is the conservative nature of the military. The military is inherently conservative because decisions affect lives and untested ideas can lead to unnecessary deaths. Unfortunately, history is the ultimate judge of military decisions, there are no crystal balls to test ideas in advance (wargaming included). Consequently, commanders, unless they are desperate, tend to stick to proven methods to mitigate risk. This form of "group think" was the underlying culprit for the wholesale slaughter of the First World War: Commanders failed to adapt to new battlefield conditions but continued to use nineteenth century tactics against twentieth century weapons. The catastrophic failure of WW I is the single biggest warning against the perils of service culture. Service culture is also the reason why an external agency, Congress, had to enforce change on the military by the Goldwater Nichols Act. For this reason, subsuming individual service cultures to a new joint identity may not be a bad proposition.

However, if the continuing budget battles are any indicator, the military still has a long way to go before achieving even this theoretical limit of jointness. Critics grimly watch as resource decisions inflame the worst schisms in inter-service rivalry and ask why "can't we just get along?" The fact of the matter is there will always be differences of opinion among the services how best to do the job. As most people know, there's always more than one way to get the job done, so why should there be any surprise if each service proposes their own specialized means of accomplishment? The good news is they all agree on the same objective. Having a range of options to choose from is a good thing and should be encouraged: we want the military to offer alternative proposals. What is necessary is a third party to make the tough decisions and choose the best solution for the given circumstances. This third party exists, it's called the Office of the Secretary of Defense. They've been around since 1947. So, why is there still a problem? There's a problem because the SECDEF hasn't been given the requisite authority to make the tough decisions. We've appointed a CEO of a multi-billion dollar corporation, but the stock holders are calling the shots! The current controversy over the Army Crusader is an excellent case in point.

The Crusader is an $11 billion, top-of-the-line, state-of-the-art, artillery piece. The Army advocates the program because, among other reasons they know that historically artillery kills more enemy than any other weapon; that's why it's called "The King of Battle." At an estimated 40 tons per cannon, though, the Crusader doesn't fit SECDEF's plans for a lighter, more mobile military. The current War on Terrorism has only served to emphasize the importance of Nathan Bedford Forrest's Civil War dictum: "Get there the fustest with the mostest." Unfortunately, it's not easy to deploy 40 ton cannons anywhere quickly. Despite this obvious problem, Secretary Rumsfeld has encountered stiff resistance trying to cancel the program and implement his Revolution in Military Affairs, a blueprint for more expeditionary forces. Why? Because Congress is involved! Legislators have rallied to protect their own special interests effectively nullifying SECDEF's authority. The biggest obstacle to quelling military budget battles and achieving closer DoD unity is Congress' diluting SECDEF's authority.

The War in Bosnia: How USAF Fighter Squadrons Addressed Friction in Tactical Operations to Assure Successful Strategic Outcomes

by Major Charles D. Dusch, Jr.

The following article is as true to the spirit and attitude of fighter operations as possible in order to give the reader an accurate sense of life in that community. The author uses footnotes to elaborate on jargon. Also, as is common in a USAF fighter squadron, the author refers to his peers by "tactical call signs"—nicknames given to each squadron member by their colleagues that is unique and descriptive. [1] The author dedicates this article to the members of "Windmill 02," the Dutch peacekeeping forces in the town of Srebrenica, Bosnia, who tried to defend that U.N. safe haven. [2]

This article is a personal account of a combat mission over Bosnia-Herzegovina in the summer of 1995 from the perspective of fighter operations in the Combat Air Forces. These operations, which supported U.N. peacekeeping forces on the ground at the tactical level, were a central part of the grand strategy of the United States and her NATO allies for stability in the Balkans. It was not an easy mission. However, the squadrons which performed these operations did so with the same professionalism, sense of urgency, and dedication to duty expected by our civilian leaders in times of war. Peacekeepers in the air and on the ground often met with frustration at the tactical level, but their discipline and integrity assured ultimate success at the strategic level. Fighting came to a halt. Nation-building began. Ordinary people got on with their lives.

From this experience, I gained a new appreciation for the core values which we were taught as cadets and a better understanding of the impact of "friction" on military operations. Most importantly, I recognized how our routine discipline and integrity confirm the enormous trust placed in our Armed Forces by our great Nation, and contribute to the success of our national strategy.

On War

Supporting the U.N. peacekeeping operations in Bosnia was a mission unlike any conventional combat missions previously experienced over Iraq. Complex rules of engagement (ROE) including two unwieldy chains-of-command, ambiguous objectives, and a lack of desire for peace among the numerous warring factions contributed to what the 19th Century Prussian military theorist, Carl von Clausewitz, called "friction in war." Friction, according to Clausewitz, was the factor which distinguished "real war from war on paper." [3] Most people think of friction as what Clausewitz termed "external friction" in war—weather, terrain, and enemy actions, for example. Traditionally, one's combat training, exercises, preparation, and experience were used to address this type of friction. However, Clausewitz saw friction in a broader spectrum.

Clausewitz included factors within one's own organization such as fatigue, will, leadership, organization, and courage within that spectrum. [4] This friction is what he termed "internal friction." [5] One's officer training, discipline, and integrity are essential in overcoming this form of friction. [6] In Bosnia, peacekeeping operations had to address both internal and external friction. To do this, the U.N. would rely heavily on air forces.

Operation DENY FLIGHT (ODF) 1993-1995

ODF was the U.N. operation to establish a No Fly Zone (NFZ) over Bosnia and support U.N. Protection Forces (UNPROFOR) and U.N. safe areas on the ground. [7] During ODF, the members of NATO—including France—were responsible for establishing safe areas throughout Bosnia-Herzegovina. Their soldiers occupied these areas, but all operations were headquartered in the Bosnian capitol of Sarajevo. Their mission was to keep the warring factions—including Serbs, Croats, and Bosnian Muslims—from killing each other in genocidal fashion. [8] Despite the best of intentions, this was a daunting task.

As part of the U.N. air forces, I deployed with my squadron, the 494th Fighter Squadron (Panthers), 48th Fighter Wing from our base at Royal Air Force Lakenheath, United Kingdom, to Aviano Air Base in northeast Italy. Although the U.N. air forces were multi-national in composition, they were dominated by the U.S. Air Force and Navy. Various aircraft patrolled the skies over Bosnia. E-3 Airborne Warning and Control System (AWACS) aircraft, along with NATO fighters and attack aircraft, enforced the NFZ. KC-135 aerial tankers from the U.S. and France refueled the combat aircraft, and EC-130E airborne command posts (ABCCC) coordinated operations over Bosnia with the Combined Forces Air Component Commander (CFACC) at the Combined Air Operations Center (CAOC) in Vicenza, Italy. [9]

Night Shift

Preparation helps to minimize friction in military operations. Fighter squadrons and their members develop standard practices to minimize friction as much as possible. [10] These practices may vary and are changed from time to time to confuse hostile forces. Adhering to squadron standards is the norm, and part of an aviator's duty.

My peacekeeping duty day began at 1600 on July 2, 1995, in a four-star hotel in the city of Pordenone,

Italy. My first combat mission over Bosnia was unlike my previous missions over Iraq, as I did not know if my unit would fly that night or not. Our squadron was scheduled to sit ground alert and only flew if hostilities were anticipated or peacekeepers requested air support. The hotel was normally very quiet at that time in the afternoon as I left for dinner. The muggy air and bustle of Vittoro Emmanuel Street contrasted sharply with the hotel as I walked to a café the Panthers' frequented. We called it, "the Perch." [11]

My pre-flight ritual included dinner and ice-cappuccino with the aviators in my flight—the three other aircrew (pilots and weapon systems officers) I would fly with. [12] Before we finished dessert, the day shift aircrew returned from their missions over Bosnia. We exchanged news, aircraft status, and words on the war. After dinner, we returned to our hotel to dress and leave for the base. We made the 20-minute drive from the hotel to our Squadron Operations Center (SOC) at Aviano.

Arriving at the SOC, we reviewed the aircrew read files, weather, and NOTAMS, [13] and signed the appropriate paperwork authorizing us to take the jets. "Driller" and "Tee-squared" would lead tonight while "Griz" and I would fly as the wingman. I couldn't have asked for a better team. The basic fighting unit that tactical fighters of the day employed was the two-ship element, a formation consisting of the flight lead and wingman. The flight lead was responsible for mission success and the safety of his wingman. The wingman's main duty was to execute the briefed mission, fly formation on his leader, and support him at all times. [14] This formation required a high degree of flight discipline—in the air and on the ground—in order to successfully and safely execute the necessary tactical operation. [15] Such discipline was second-nature and a matter of personal pride in the squadron.

It is also unique to military aviation. I have flown with civilian colleagues in the general aviation world, many of whom have over 5,000 hours in various aircraft. They have repeatedly admired the distinctive attitude with which military aviators approach aviation—from the preflight through post-flight briefings and the sortie in between.

As flight lead, Driller accomplished our squadron-standard preflight briefing which informed us how he planned on executing the mission. We next walked over to the Intelligence Section (Intel) for our pre-mission briefing. [16] It was about 2000 hours. The Area of Responsibility—or AOR—was hot. The various factions were doing their level best to kill each other and any peacekeepers that might get in their way. Heated artillery exchanges were reported throughout Bosnia. It would not be a quiet night. Unlike the previous night when we waited on alert all night in the SOC, we would fly tonight.

The briefing was deadly serious: the Intel officer gave us the locations of the numerous anti-aircraft threats we would face, including an SA-6 Surface-to-Air Missile (SAM) battery that was believed to have shot down Captain Scott O'Grady exactly one month ago to the day. [17] We soberly copied our Search and Rescue (SAR) information, reviewed our escape and evasion plan, and signed for our evasion kit and "blood chit." [18] We sanitized—stripped off the patches from our flight suits and emptied our pockets so as to reveal nothing about our unit to potential captors. Each of us carried our military I.D. card. [19] I also carried some cash just in case I ever went missing, which might allow me to "buy" my way to freedom.

My next stop was the life support trailer where I put on my G-suit, survival vest, and parachute harness. I checked my flight helmet and oxygen mask and then drew my Beretta 9mm pistol, extra ammunition clips, GPS, and PRC-112 SAR radio. Driller got us together to go over a few last minute updates he had gotten from Intel. [20] Then it was time to jump into a waiting crew van and step to the jet.

Our F-15E Strike Eagles were located in several Hardened Aircraft Shelters (HAS) at Aviano. As our van pulled up, we could see the crew chief reviewing the aircraft maintenance forms while his assistant lounged against the nose wheel. Both men were soaked in sweat from accomplishing their preflight checks. It was hot. Although it was after 2100 hours, the heat took my breath away as I stepped out of the air-conditioned van into the muggy summer evening wearing my 40-plus pounds of flight gear. As Griz and I approached the jet, both enlisted mechanics came to attention and saluted. We returned the salutes. The crew chief went over the maintenance forms with us while his assistant got the cockpits ready. We then began our pre-flight checks.

I was very familiar with this particular F-15E that I would fly tonight. She and I had spent some time together over Northern Iraq. [21] She was no stranger to combat either, and tonight she was ready for war. I inspected her battery of weapons: two AIM-120 AMRAAM radar-guided air-to-air missiles; [22] two AIM-9M Sidewinder heat-seeking air-to-air missiles; four GBU-12, 500-pound laser guided bombs; [23] 500 rounds of 20mm ammunition for the M-61 Vulcan gatling gun; ample cartridges of chaff and flare countermeasures; and three 610 gallon external fuel tanks, a total load of 34,000 pounds of JP-8 jet fuel and a staggering gross

weight of over 70,000 pounds—10,000 pounds less than her maximum combat weight. [24] As we completed our walk around, it was clear the crew chief and weapons load crew had done their jobs well. We climbed up the ladder and strapped on the jet.

The Mission

At 2130 hours, we started engines inside our HAS and accomplished our system checks. At 2145 we taxied onto the apron and waited for Driller to check in on the radios. That done, Panther three-one (31) flight—as we were known—rolled down the taxiways to the runway to meet a 2210 takeoff time. Prior to taking the active runway, our ground crew removed the last safety devices from our weapons array. Then they climbed back into their vans and drove off into the night. At 2209 hours, Driller checked us in on control tower frequency:

"Tower, Panther 31 is number one, runway zero-five." [25]

"Panther 31, winds are calm, you are cleared for takeoff runway zero-five, change to departure."

"Panther 31, cleared for takeoff."

Both war-laden Strike Eagles taxied onto the active runway. Driller lit his afterburners to take off first. My chest vibrated from the thunder of his twin Pratt and Whitney F100-PW-229 motors, together rating over 58,000 pounds of thrust, as he rolled down the runway. [26] The 50-foot long white-hot flame of each augmenter momentarily disrupted my night vision. Twenty seconds later we followed him. I locked him up with the APG-70 radar and followed in trail. As we climbed out east over the Adriatic Sea, I ran my in-flight systems checks as he contacted the NATO AWACS orbiting above and accomplished our required checks with them. [27] That completed, the senior Theatre Battle Manager relayed the battle picture to us and cleared us into the AOR.

"Panther, Green-'em up," Driller called over the radio. [28] We ran through our pre-combat checklist and established our Combat Air Patrol (CAP) orbit along the eastern Adriatic coast of Croatia and the western border of Bosnia. [29] There was no doubt where the border was this clear summer night. All along the mountainous border running north to south were numerous flashes from the largest artillery battle I have ever seen in my life. The entire border from the city of Bihac in the northwest to Mostar in the southwest was illuminated with the yellow/orange flashes of hundreds of firing muzzles and exploding shells. They contrasted sharply with the white/silver flashes of lightning from a line of thunderstorms that hugged the northern Adriatic shore near Trieste. It was an impressive light show, one made by man and one made by God.

I was intrigued. Driller's voice broke the spell, "Panther, cold right." We made a turn to the west away from the AOR after completing the first "leg" of our CAP. Although the ground situation was intense, the aerial picture was quiet. We droned through numerous orbits with nothing on our sensors. We again turned east towards Bosnia. AWACS passed us its periodic "Picture Clear" call, affirming the obvious. What promised to be an exciting sortie with potential for action had turned monotonous. War can be like that: hours of monotony punctuated by seconds of sheer terror. In such circumstances, if one wasn't disciplined, complacency crept in and ended in disaster.

Suddenly, a new, distinct flash from Bihac lit up the sky—brilliant, laser-intense, huge and screaming skyward. "Panther, check 30 right, SAM launch." Without thinking, our training and discipline kicked in. I heard my own voice direct our formation to maneuver in order to better assess the missile's intended target. Like a well-oiled machine, Panther flight executed its briefed SAM drill. Griz continued watching the threat as I checked out the right side of the jet, remembering how the North Vietnamese (and others) duped unsuspecting aircrews by firing one SAM as a decoy and using another SAM from the blind side to get them. [30]

All was quiet to the south, however. I looked back in time to see a tremendous explosion on a hill near Bihac. My clock told me this encounter lasted a few seconds; it felt like half the known age of the universe. Following NATO procedure, we passed this information to AWACS. Later, we were told that the Serbs launched a Soviet-built SA-2 SAM at the Muslims, using it much like artillery. Although fired 60 miles away from us, the SA-2 appeared much closer.

Sarajevo

Our time on station passed. Two Marine F/A-18 Hornets relieved us so we could fly out of the AOR to refuel with a KC-135 tanker. The tanker not only passed us fuel but also let us know some of the baseball scores from the States. We returned to our CAP and resumed our patrol. The Marines went home to their beds. It was after midnight. The artillery battle raged on, silently from our perspective. Away in the east towards Sarajevo, new flashes appeared. The battle was heating up. Not long after, the Theatre Battle Manager called us. We had a new tasking. He told us that French UNPROFOR peacekeepers in Sarajevo were being shelled by Serb mortars and passed us the target coordinates. In the dim, night-lighting of the cockpit, we studied them carefully as we awaited U.N. attack authorization. Time passed and no authorization came. The Battle

Manager cleared us back to the tanker to refuel. "I'll have words for you by the time you return to station," he assured us.

Consistent with the ROE at the time, "authorization" in Bosnia was not a simple process. A dual-sided chain-of-command existed, one NATO and the other U.N. The NATO chain-of-command required approval from both the military and civilian side of the Alliance. The NATO process could be awkward, but it was normally expeditious. Once those authorizations were granted, the next level of authorization had to come from the U.N. Secretary General's special envoy in Sarajevo. Final approval to attack rested with the Secretary General of the United Nations in New York with a seven-hour time zone difference. This arrangement proved cumbersome on a good day. Tonight it was at its worst. We returned to our patrol and still did not have authorization to attack. [31] Time passed slowly. The flashes in the Sarajevo area intensified, the French paratroopers were still under fire and awaiting our help, and we continued in our orbit growing increasingly frustrated, waiting "words" despite our repeated inquiries, and boring holes in the sky.

We had now been airborne almost four hours. Gradually, the artillery flashes died down. Soon it was relatively quiet. AWACS called again, "Panther, go home." That couldn't be right, I thought. It must be the night flying, or fatigue, or cruising at high altitude for so long that I doubted my own ears. "Say again," Driller replied. I was not the only one who doubted what I heard, but the AWACS controller repeated, "Panther, go home." We were incredulous. Superbly combat-trained, primed and ready to go to the aid of our French allies, we were not expecting this order. Driller shot back, "What do you want Panther to do with all this gas? We can't land at this gross weight." I thought I heard irritation in his voice. There was a pause before we heard the Battle Manager's level voice, "Panther, go home. Dump the gas. I'll talk with you back on the ground."

We heard AWACS check in with Italian radar control as it returned to base. We made several more orbits until AWACS was safely out of the AOR before we too departed our station to head west over the Adriatic. We accomplished our post-combat checks and opened up the fuel dump vents on the trailing edges of our wings, dumping hundreds of gallons of dead dinosaurs which vaporized above the black Adriatic. That reduced our total weight so we could safely land on Aviano's 9000-foot-long runway. Crossing the Italian coast, I was suddenly very tired. It was after 0200 hours. [32]

Driller landed safely. We landed next. The ground crews met us as we cleared the active runway and safetied our weapons, then we returned to our HAS. We had no maintenance problems to note in the aircraft forms, which meant the ground crews could go home early. They were happy to have their jet back. It is their airplane we just took into harm's way, after all. Griz and I just "borrowed it" awhile. The crew chief was disappointed we didn't drop ordnance. I did not delay my post-flight aircraft walk-around because I wanted to hear what went on in Sarajevo, but at the same time, as a professional airman, I did a good post-flight inspection. We gave the aircraft forms to the maintenance debrief team, where aircrews enter any aircraft flight problems on a computer and tell trained repair technicians what problems require correction before the jet can fly again. As we came out of debrief, the early shift was already preparing their jets to fly the next go.

Friction in the Real World

As the flight lead, Driller did most of the talking in the debrief. [33] A colonel whom I did not know came into the SOC. As promised, we were told what transpired while we waited to help the French. He told us that permission to attack had been approved quickly by the NATO chain-of-command, but when the U.N was asked for authorization, the U.N. authorities in Bosnia deferred the decision to the U.N. Secretary General. Apparently, the Battle Manager continued, the Secretary General had gone out to dinner in New York and could not be found. Our attack authorization never materialized. [34] Evidently, the French finally stopped waiting for authorization and fought back in self-defense. [35] The colonel concluded by adding laconically, "it's quiet now."

There was not much else to add. We departed the SOC for breakfast in silence. We stopped at an AAFES [36] snack bar near the flight line that had been converted from a London double-decker bus and had a great American breakfast—and it was open at 0400. We ate silently while the sun came up in the haze, promising another hot, muggy day in Italy. I kept thinking about all the air power assembled to support the U.N. peacekeepers and the impact of friction caused by the complex authorization and ROE. The unspoken thought we shared was, what if they had been U.S. soldiers in Sarajevo? This was unlike anything I had ever seen in my previous years of air combat training. It was quite different from what we had faced over Iraq. The members of Panther flight got in their rental cars and returned to our hotel while the rest of the world was just starting to wake up. We would be back that evening to do our job again—professionally.

I was beginning to understand Clausewitz as a practical guide to officership. Character and courage are essen-

tial to his "military genius" who could overcome friction in war. They were "dependable" and would "never fail." [37] Democracies rely upon warriors to be on station and ready to execute as ordered. As hard as it was to face, tactical success was subordinate to the overall strategy. The hard thing for any peacekeeper was to take a ring-side seat to the orgy of genocide in the Balkans. This was not how any of us were trained to fight.

But to keep going—to do a professional job—I had to dig deep inside to the very roots of my officer training. In that well, I found the integrity, fortitude, and discipline that allowed me to press on night after frustrating night. The real danger in Bosnia and in peacekeeping operations in general, was that complacency could seep in. "Complacency kills," goes the old adage. The challenge is to stay alert every sortie in order to remain alive and ready to carry out national strategy.

A week later, Panther 31 was flying over the besieged U.N. safe haven of Srebrenica. We would again be poised for battle, ready and able to employ decisive air power at the precise moment and circumstance it was needed. Once again due to internal friction, a crucial moment would pass as the U.N. leadership lacked the will to authorize air power to defend the U.N. safe haven or the UNPROFOR peacekeepers there. [38] As a result, a Dutch peacekeeper would be killed and several others wounded. Some 6,546 Muslim men and boys would be massacred as Serb forces overran the town and committed "the largest single war crime in Europe since the Second World War." [39]

This massacre proved to be a catalyst of change. The cumbersome chain-of-command was modified. The peacekeepers initiated Operation DELIBERATE FORCE, conventional strikes against Serb forces to end their aggression and compel them to obey the world community. Those strikes, which occurred coincidentally with a combined Bosnian/Croat ground offensive, resulted in a strategic withdrawal by the Serbs, lifted the siege of Sarajevo, and brought the warring factions to the Dayton peace talks. [40]

This was war in Bosnia, Operation DENY FLIGHT, and U.N. peacekeeping, a real world example of the impact of "friction" on military operations. It required the utmost professionalism, sense of urgency, and dedication to duty necessary in order to surmount that friction and assure strategic success. The routine discipline and integrity of our Armed Forces, essential to successful operations at the tactical level of war, are equally essential to the success of our national strategy, and upon which our Nation can rely.

Endnotes

[1]Author's experience in the F-4 and F-15E. My heartfelt thanks to Lt. Col. Kurt Schake, PhD and Eagle Driver for his help and mentoring on this paper. Tactical callsigns are usually bestowed on new squadron members upon completion of their Mission Ready evaluation flight, in which they are certified as qualified to perform their duties in their primary weapon system, such as the F-15, A-10, etc. Naming ceremonies are private squadron events, usually held in the squadron lounge and based on traditions that often date back to WW I or WW II (depending on the age of the particular squadron).

[2] Jan Willem Honig and Norbert Both, *Srebrenica: Record of a War Crime*, (New York and London, Penguin Books, 1996), p. 25. The Bosnian city of Srebrenica, on the eastern border with Serbia, was one of several cities designated by the U.N. as a "safe haven," a place where refugees could go for protection by U.N. peacekeepers and be under the umbrella of the U.N.'s High Commission for Refugees (UNHCR). Srebrenica was allotted to the Dutch, hence their callsign, "Windmill." This is an excellent work.

[3] Carl von Clausewitz, *On War*, (Princeton, Princeton University Press, 1976), pp.119-121.

[4] Carl von Clausewitz, *On War*, (London, Penguin Books Ltd., 1968), pp. 160-162.

[5] Clausewitz, *On War*, (Princeton), pp.119-121.

[6] *Ibid.,* pp. 105-108. Clausewitz referred to these attributes as "strength of mind" and "character."

[7] "Operation Deny Flight," *Reuters News Agency Article,* December 21, 1995.

[8] *Ibid.*

[9]Author's knowledge and experience flying the F-15E and working in the CAOC as part of ODF, 1995.

[10] Clausewitz, *On War*, (Princeton), p.101. Clausewitz believes these habits are a form of courage to cope with personal danger—one of his elements of friction. Courage is an attribute of military genius, which helps to overcome friction.

[11]"The Perch" is an aviation term. In an airfield's overhead traffic pattern, it is a point on the downwind leg from which one begins to turn on the visual approach to landing. In peacetime or combat, deploying USAF squadrons normally find a place to go to socialize, such as the officer's club, a squadron snack bar, etc., and have as normal a recreation time as possible.

[12] The F-15E is a two-place fighter with dual controls for flying the aircraft and operating the systems. In general, the pilot flies the jet, navigates, and fires the weapons. The weapon systems officer, or WSO, runs the radar, the infrared targeting system, and defensive countermeasures. A good F-15E crew is very difficult to defeat air-to-air or air-to-ground. See William L. Smallwood, *Strike Eagle: Flying the F-15E in the Gulf*

War's Inc., 1994).

[13]NOTAMS–Notices to Airmen, a system that disseminates critical information about airfields, airspace, procedures, etc., essential to safe flight operations. Each squadron also maintains a series of less critical "read files," useful information on flying operations that aircrew members must read and then sign or initial compliance. MSS 481, *Airmanship for Military Aviators,* (USAF Academy, 2000), Lesson 4.

[14] Multi-Command Manual (MCM) 3-3 (Unclassified), *Combat Aircraft Fundamentals, F-16*, (HQ ACC/DOT, 1 September 1992), p. 3-11.

[15] Multi-Command Manual (MCM) 3-3 (Unclassified), *Combat Aircraft Fundamentals, F-15E,* (HQ ACC/DOT, 1 June 1994), p. 3-1.

[16]The Intelligence section of a squadron is often located in a secure room or vault that is colocated with the Weapons and Tactics branch of the squadron. It may have one officer and two or three enlisted Intel specialists. Their mission is to insure that squadron members are aware of threats and any knowledge about an adversary obtained through observation, investigation, analysis, or understanding. Intel is the warfighter's key link with our core competency of Information Superiority. See Air Force Basic Doctrine, AFDD-1, (September 1997), p. 82.

[17]Scott O'Grady, *Return With Honor*, (New York, Doubleday, 1995), pp. 25-29. This work is the only source for unclassified, routine USAF fighter operations in Bosnia during the summer of 1995.

[18]"Blood Chit," a promissory note from the U.S. government offering to reward anyone aiding a U.S. serviceman in distress. Chits are printed in several languages, including English, and can be used to communicate. Chits are also called "pointy-talkies," as one find a phrase such as "I am injured and require medical attention" in English and point to its equivalent in another language. In the Bosnia AOR, chits had elevn languages printed on them to include Serbian and Serbo-Croatian. See O'Grady, *Return.*, p. 15.

[19] *Ibid.,* pp. 7-18.

[20] *Ibid.*

[21]Author's flying logbook.

[22]AIM—Air Intercept Missile; AMRAAM—Advanced Medium Range Air-to-Air Missile (nicknamed, "the Slammer"). A new-generation radar-guided, all-weather, beyond-visual-range air-to-air missile using a 48 lb. high-explosive directed fragmentation warhead and near Mach 4 cruising speed to destroy single or multiple targets, including those attempting evasive maneuvers. See Susan H. H. Young, "Gallery of USAF Weapons," *Air Force*, (May 2000), pp. 155-156.

[23] Guided Bomb Unit.

[24]Author's knowledge and experience flying the F-15E from 1993-2000. For a good description of the aircraft and weapons array, see Tom Clancy, *Fighter Wing*, (New York, Berkeley, 1995), pp. 70-85 and pp. 147-152. An excellent source of the F-15E in combat is William L. Smallwood, *Strike Eagle: Flying the F-15E in the Gulf War*', (Washington D.C., Brassy's Inc., 1994).

[25] Runways are identified by their magnetic heading without the last zero, within plus or minus 5 degrees. Therefore, runway 05 has a magnetic orientation of 050 degrees, however, its actual magnetic orientation could be between 045 to 055 degrees. See MSS 481, *Airmanship*, Lesson 4.

[26] Afterburners are devices which inject fuel into the exhaust nozzle of a jet engine. They boost engine thrust but consume more fuel. They are sometimes referred to as "augmenters" or "reheat." Clancy, *Fighter Wing*, p. 303.

[27] Clancy, *Fighter Wing*, p. 309.

[28]"Green 'em up" is fighter pilot jargon for accomplishing the pre-combat checklists. MCM 3-3, *Combat Aircraft Fundamentals, F-16,* p. A3-5.

[29] Honig and Both, *Srebrenica,* p. 19.

[30] Smallwood, *Strike Eagle*, pp. 117-119. This tactic, although an old one, can be effective as one must honor the first attacking missile and maneuver or it could prove lethal. By doing so, one loses airspeed and potentially maneuverability, making the second missile's job easier. According to Smallwood, this appears to be the tactic used by Iraq to shoot down Col. Dave Eberly and Maj. Tom Griffith in the Gulf War. For a Vietnam War account of this tactic, see Lt. Col. G.I. Basel, *Pak Six*, (New York, Berkeley Publishing Group, 1982), pp. 75-76.

[31] For some excellent accounts of this very complicated authorization chain-of-command, see Honig and Both, *Srebrenica*, pp. 18-21, as well as Michael O. Beale, *Bombs Over Bosnia: The Role of Air Power in Bosnia-Herzegovina*, (Maxwell AFB, Air University Press, 1997), pp. 22-23, and 34. Beale describes the chain of command thus, "The NATO chain-of-command went from the fighter aircraft through an airborne command and control C-130, to the Combined Air Operations Center at Vicenza, Italy, where the combined force air component commander was the approving authority for employing ordnance. The other chain-of-command went from the UNPROFOR forward air controller on the ground through Bosnian Air Support Operations Center located in Kiseljak, Bosnia, and then to Zagreb. There, the UNPROFOR commander asked U.N. Headquarters in New York for permission to employ ordnance." In 1994, the U.N. Special envoy in Bosnia could authorize release, but could defer to U.N. Headquarters. My sincere thanks to Captain Mike Veneri, USAF Academy, who was an Intel officer for the 492d FS deployed to Aviano and an

ABCCC Airborne Intelligence Officer later serving in the Balkans. He is very familiar with this topic and was awarded two Aerial Achievement medals for his work there.

[32]Author's knowledge and experience flying the F-15E during ODF.

[33]For more detail on USAF debrief techniques, see Gregory D. Thomas, "PTP's: How to Construct a Debrief Properly," *USAF Weapons Review*, (Winter, 1999), pp. 18-23.

[34] For more on the U.N. authorization process, its hesitation to employ air power, and the resulting fall of the enclave of Srebrenica, see Honig and Both, *Srebrenica,* pp. 15-26.

[35] This was not the first time French peacekeepers deviated from U.N. procedures. Also in July of 1995, members of the French Foreign Legion, as part of the NATO-led rapid reaction force, refused to paint their vehicles U.N. white. A Legion sergeant, quoted in *The Washington Post* explained, "We won't paint our vehicles U.N. white because that's the color of surrender." See Howard R. Simpson, *The Paratroopers of the French Foreign Legion; From Vietnam to Bosnia*, (Dulles, Virginia, Brassey's Inc., 1997), p. 114.

[36] Army and Air Forces Exchange Service. AAFES provides merchandise and services to military customers around the world.

[37] Clausewitz, *On War*, (Princeton), p. 101.

[38] Beale, *Bombs Over Bosnia*, p.34. Also see Honig and Both, *Srebrenica* pp. xix, 3-26.

[39] Honig and Both, *Srebrenica,* pp. xix, 3-26. 23,000 women and children were expelled from the town.

[40] Beale, *Bombs Over Bosnia*, pp 45-47.

[1]

Terrorism, who cares?

Japanese Perceptions and Approaches to Terrorism

by CIC Jason Kramer

The following words were published in 1998, approximately three years before the attack on September 11th:

> If the device that exploded in 1993 under the World Trade Center had been nuclear, or had effectively dispersed a deadly pathogen, the resulting horror and chaos would have exceeded our ability to describe it. Such an act of catastrophic terrorism would be a watershed event in American history. It could involve loss of life and property unprecedented in peacetime and undermine America's fundamental sense of security, as did the Soviet Atomic bomb test in 1949. Like Pearl Harbor, this event would divide our past and future into a before and after. [1]

These words, published in the article "Catastrophic Terrorism," by Ashton Carter and John Deutch in the journal, Foreign Affairs, were made all too real on September 11th, 2001, by the actions of Osama Bin Laden and his supporters. Experts like Carter and Deutch looked at the world environment of their day and saw the above scenario as a dangerous future possibility. Unfortunately, in many respects, this possibility became a reality. Today, terrorist experts are also sending warnings of probable danger. In today's volatile and violent world, these warnings are increasingly valid. Experts state that terrorism is likely to happen in the future. They were right before. It is entirely likely that they will be right again.

Given this information, the next question one would ask is this: "What are we and our allies doing to protect ourselves?" This is an imperative question, and it begs a thorough answer. Both elements of this question are important. Since the attack on September 11th, scholars, intellectuals, and government officials alike have exhaustively evaluated American policy concerning terrorism. However, the second part of our question is also imperative and must not be overlooked. If the United States is to be an effective leader in the war against terrorism and also protect its citizens across the globe, its leaders must have a thorough understanding of how its allies approach, deter, and defend against the threat of terrorism.

The United States' principle ally in Asia is the island nation of Japan. Like the United States, Japan lives under the threat of terrorist action. As a sophisticated nation and an ally of the U.S., one would expect that the Japanese nation would approach the threat of terrorism with great vigor. However, the members of Japanese society view terrorism quite differently than the citizens of the United States. In short, Japanese society has a low awareness of the terrorist threat and does not perceive an immediate danger. Accordingly, Japan's efforts on the deterrence and prevention of terrorism are much less substantial than those of the United States.

Unfortunately, the apathy expressed by the Japanese nation is not warranted. History has shown that Japan is vulnerable to terrorist action. The current threat to the Japanese nation, while limited, is very real and should not be taken lightly. The policies (or lack thereof) of the Japanese government that result from this general apathy are neither decisive nor effective measures towards the prevention of future terrorism. This could prove dangerous for both U.S. and Japanese citizens.

The History of Terrorist Action in Japan

Japan is no stranger to terrorism. Japan's history regarding terrorism is neither short nor trivial. Terrorists that have acted within Japan's borders include such notable groups as the Aum Shinrikyo cult, the culprit of the infamous sarin attacks in the Tokyo subway, and the Japanese Red Army. While Japan's history regarding terrorism does not match the horror wrought in various other areas of the world including the United States, this history proves that the Japanese nation is not immune to either terrorist groups or acts of terrorism.

The Japanese Red Army, also known as the Anti-Imperialist International Brigade, has instigated many acts of terrorism across the world. This international terrorist group was formed in 1970 with the goal of helping inspire world revolution by overthrowing the Japanese government. Terrorist incidents linked to the Red Army include hijackings and an attempt to take over the US embassy in Kuala, Lupur. [2] Unfortunately, the acts by the Japanese Red Army only scratch the surface of the history of terrorism within Japan.

The Japanese cult, Aum Shinrikyo, participated in several terrorist attacks throughout the early 1990's. In April of 1990 the cult participated in a failed attempt to spray a biological toxin from a vehicle. [3] The spraying attack was attempted again on the 3rd of June in 1993, but once again was a failure. [4] In that same year the cult also sprinkled biological toxin in front of the US Naval Base at Yokosuka and attempted to sprinkle the toxin in front of Narita airport. [5] In Matsumoto on the 27th of June, 1994, the cult released sarin out of a van. The attack caused seven deaths and over 150 casualties. [6] These attacks were both frightening and destructive. However, on March 20th, 1995, the terrorist cult was able to surpass all of its past efforts. On this date, the cult successfully executed a mass casualty attack upon Japanese civilians. Members of the cult released sarin within five different subway cars in a manner so that the cars converged at Kasumigaseki, the location of Japan's bureaucracy. [7] The attack killed 12 people and injured approximately 6,000. [8]

Since the horror of the subway attack in 1995, Japan has continued to experience terrorist attacks. Later in 1995, a man with a screwdriver who claimed to be a member of the Aum cult hijacked an All Nippon Airways Boeing 747 flight carrying 350 passengers for 16 hours. [9] In 1996, the Japanese embassy in Lima, Peru was actually taken over. [10] In the article "Terrorism and Antiterrorism in Japan: Aum Shinrikyo and After," Naofumi Miyasaka, an Associate Professor of the Graduate School of Security Studies at Japan's National Defense Academy, and one of a select few Japanese nationals who are experts on terrorism, adds:

> International Terrorists have attacked or attempted to attack Japanese since 1995: first in December 1996, with MRTA's hostage-taking at the Japanese ambassador's residence; next in Luxor; and again in August 1999, with the hostage-taking in Kyrgistan by Islamic armed forces. [11]

Based on this information, it can be safely concluded that terrorist actions consistently caused problems for Japan throughout the 1990's.

Japanese Society's Outlook on the Threat of Terrorism

Despite these past incidents, the Japanese populace currently has an astounding lack of concern for the threat of terrorism. While feelings of Japanese citizens vary, in general, the attitude in Japan regarding terrorism borders on apathy. This contrasts greatly with the heightened concern regarding terrorism found among American citizens today.

In the article "Another Against the Other: Terrorism Through Japanese Lenses," Steve McCarty, the Japan president for the World Association for Online Education and a professor at Kagawa Junior College, Japan, describes this feeling of apathy. He writes:

> Most passers by interviewed in a youth mecca of Tokyo showed concern that Japan or they personally could be harmed by terrorism. But considerable apathy was expressed. A mature woman said, "I have stopped traveling by plane and worry this terrorism will spread to the rest of the world." But a 36-year-old man said. "In no way, really I was interested after the U.S. attacks a few weeks of my life and business are not directly affected. An 18-year old woman said, "No. I have no interest in the events" (2). On a BBS I predicted with black humor that Muslim veils would become a fad, not realizing that Muslim scarves were already the rage. That shows how some young women were able to gain ownership of world events. [12]

This lack of concern is highlighted by the fact that few people talk about terrorist violence. Terrorism is rarely talked about on TV, scant research within Japan is being done on the subject, and there are few if any college courses on terrorism. The topic itself is almost taboo within academic circles. Because about 70% of the instructors in Japan are liberal, the topic itself is viewed as right wing. [13] Dr. Katayama, a Senior Research Fellow for the Japan Defense Agency's National Institute for Defense Studies, also an expert on terrorism, notes that because security topics

were not studied seriously in Japan in the past, there is currently a lack of available professors with the ability to teach on such subjects. He also explains that military matters in general are not very popular among Japanese academics and that he does not know of a single strategic studies course in a Japanese University. [14]

The issue of terrorism receives little attention within the Japanese government as well as the general populace. Senator Yoshimasa Hayashi of the Japanese House of Councilors, offers some valuable insight on how the Japanese government views terrorism. According to Senator Hayashi, terrorism is a low priority for the Japanese government. He notes that the sense of urgency regarding the immediate possibility of attack is simply lower in Japan than it is in the United States. He explains that while it is a concern, other issues such as the economy or current government scandals are receiving more attention. Senator Hayashi also inferred that the rush within the Japanese government to support the US operations in Afgahnistan following September 11th were actually due to concern over saving face, rather than an actual concern over terrorism. The Japanese government did not wish to repeat the dreaded embarrassment or "Gulf Trauma" resulting from Japan's lack of support in the Gulf war, and thus provided support for the United States operations in Afgahnistan. [15] The attitude within the Japanese government differs greatly from the sentiments and concern continually expressed by legislators within the United States, who make terrorism both an active and a public issue.

Both the 1995 sarin attack in Tokyo and the recent attack in the United States on September 11th failed to significantly raise the level of sustained concern among Japanese citizens over terrorism. The Japanese seem to easily forget terrorist incidents. [16] Within one year after the Tokyo attack, the general public and the government lost interest in the issue of terrorism. [17] Prior to the September 11th attack, Professor Miyasaka wrote that the Japanese way of thinking about terrorism was still the same as it was in the post war period " . . . as if nothing happened in 1995- the year that a seas of change occurred in the history of world terrorism." [18] Even after the 9/11 attack, the Japanese paradigm regarding terrorism was not significantly changed. [19] After September 11th, the Japanese people felt a rush of fear about terrorism. [20] They cancelled overseas trips to Hawaii, Australia, and even Japan's Southernmost island Okinawa. [21] Yet, their worries quickly faded. They forgot about terrorism, just like they did after the sarin attack in Tokyo. [22]

Reasons Why the Threat of Terrorism Receives a Lack of Attention in Japan

The lack of concern about terrorism in Japan is in part a direct result of the way that the Japanese approach and define (or rather fail to define) terrorism in general. The Japanese people generally lack a clear-cut understanding of what terrorism is all about. Many Japanese see terrorist organizations as isolated. They think that terrorism involves a few thorns such as Al Qaeda, rather than a widespread threat. The Japanese have not even come up with a basic definition for terrorism. Defining terrorism is the starting point in any effort to combat terror, and they haven't even gotten that far. The U.S. State Department has 33 different groups, such as the FBI, CIA, etc., who each have their own definition of international terrorism. Information is shared between these organizations. In Japan, this is not the case. [23] In the book, Terrorism: Prevention & Prepardness New Approaches to U.S.-Japan Security Cooperation, Michael Green writes: "According to a Japanese legal definition, terrorism is wide spread dissemination of fear through violent destructive activities in order to achieve extreme beliefs, yet the meaning of the word "terrorism" is still up for debate." [24]

Professor Miyasaka explains that the Japanese perception of terrorism is very limited. Even after the sarin attack in Tokyo in 1995, the weapons of mass destruction attack that shocked the world, many Japanese failed to recognize the Aum Shinrikyo cult as terrorists. [25] Professor McCarty explains that "The issue was never thought of in terms of terrorism, or that view by specialists never reached the public." [26] He further notes that the Japanese view terrorism as foreign, and the Aum attack was from a very mainstream and native element of Japanese society. [27] Professor Miyasaka adds that in a group of 300 people that he gave a speech to, only half of the group felt that the Aum cult had performed a terrorist action. They felt that since it was religious in nature, it was not terrorism. [28] Michael Green explains:

> American [Terrorism: Prevention and Preparedness conference] participants were surprised throughout the course of the discussion at the Japanese public's complacency about the implications of the Aum attack, but the Japanese side explained that this was because most people saw Aum as a bizarre religious cult without any clear ideological or political objectives. [29]

In addition to the Aum cult, both an airline hijacker in 1999 and a math teacher who bombed a school in 1999 were not labeled as terrorists. [30] Professor Miyasaka adds "It is not an exaggeration to say that only antiheroes in movies or novels are seen as terrorists." [31]

The Japanese are confused about what does and does not constitute terrorism. In addition, the Japanese approach in general to the issue of terrorism greatly

differs from that of the United States. Professor Miyasaka explains that the Japanese do not see terrorism as a security issue that should be addressed every day. He explains that they see it as more of a temporary incident. [32] People felt that the sarin attack on Tokyo was an unusual occurrence that could never happen again. [33] Following the attacks, the Japanese did not emphasize vigilance. [34] Rather, they emphasized pointing out who executed the attack. [35] This reaction differed greatly from the emphasis on vigilance in the United States following the September 11th attacks.

The Japanese look at the root of terrorism more carefully than the citizens of the United States. [36] According to Michael Green, Japan is " . . . more sympathetic to the root of global terrorism, and less willing to respond to terrorism as a global problem." [37] There are three main approaches to terrorism within Japan: 1) the "root cause theory," this focuses on what creates terrorism, 2) the "risk-averse policy," a policy that one should only be concerned with domestic terrorism and that casualties should be avoided (even terrorist casualties are a concern), and 3) the topic of terrorism is simply taboo and to be avoided. [38] None of these approaches stress vigilance or public awareness of the terrorist threat, and not one of them would conform to the United States' new "war on terrorism."

The Japanese perspective regarding the threat of terrorism is invariably shaped by their view of Japan's place in the world environment. Mr. Nakai, a member of the US Forces Japan J-5 (plans and policies) office who works with government relations and Status of Forces Agreement matters explains that the Japanese do not perceive a threat in the world environment. [39] He further explained that the Japanese feel that they will be left alone as long as they don't promote offensive or threatening capability. [40] They are under the impression that because they are active economically (for example selling electronics) and pass on lots of money, their country should be favored. [41] The majority of the people simply feel that if they are peaceful, they will not be bothered. [42] "It is a Japanese trait to think 'if we just keep our heads down, we will be okay,' said Toshiyuki Shikata, a professor of crisis management at Teikyo University. 'The idea that something might happen does not come to the Japanese mind.'" [43] They have been able to afford to keep this attitude because of the bilateral security offered by the United States. The U.S. has been like a security blanket for them, and as Mr. Nakai put it, the Japanese mindset is that "we're pacifists and nobody's going to bother us but we always have big brother to protect us if somebody does bother us." [44] This mindset on basic security matters naturally translates to the specific issue of the threat of terrorism.

The Japanese assurance that if they are not threatening they will be left alone stems from the pacifist attitude that has been fundamental to their society since the aftermath of the Second World War. Following World War II, the Japanese people wanted peace at all costs. [45] Peace (heiwa) and human rights (jinken) became pillars in the Japanese approach to security. [46] Their constitution is known as the "peace constitution," and it disavows the right of armed belligerence. [47] Initially, the Japanese even renounced having any form of a military. [48] It took the combined efforts of Macarthur and his staff to finally establish a police force in Japan. [49] This police force eventually evolved into the Self Defense Force Japan wields today. [50]

Today, the pacifist ideology is still very well ingrained into their society. [51] According to Professor McCarty, this pacifism is conveyed in several areas. Teachers generally promote political correctness, any violence is almost totally out of public view (in other words, under the table), and the media is very one-sided, presenting the typical Japanese values. "For example, in Afghanistan they reported mostly on the bombed civilians, and now it is similar with the Palestinians." [52] The Asahi newspaper in Japan, read by millions, actually advocated an end to US bombings in Afghanistan prior to the fall of Kabul. [53] Professor McCarty elaborates that " . . . the post-war pacifist ideology has served Japanese people so well that they cling to it even when it is no longer viable." [54]

The Japanese are adamant about promoting peace. Yet, as a society they seem to have trouble delineating between peace and freedom. [55] These are two very different concepts. Many Japanese simply do not seem to quite understand the price of freedom itself. [56] The socialist party in Japan did not even recognize that their Self-Defense Force was necessary until 1995. [57] In general, military members in Japan travel in civilian clothing off base due to the public's anti-military sentiment. [58] The Japanese want to be an Asian Switzerland. Yet, they fail to recognize that even Switzerland has a very capable military and is prepared to defend itself if need be. [59]

It has been quite a struggle for Japan as a society to even begin to address defense issues at all. Only since the start of the Koizumi administration has direct dialog regarding defense issues become more common. [60] In the United States, politicians from across the political spectrum address defense issues. [61] This is not true in Japan. [62] According to Senator Hayashi, prior to the cold war, simply raising a defense issue could get a politician labeled as a right-wing hawk. [63] This could be detrimental to one's career. This struggle has been manifested in both political and scholarly arenas. Only recently have a significant number of Japanese scholars begun to show interest in

security topics. [64]

Instead of addressing security issues on a regular basis, the Japanese tend to sweep them under the rug. Security issues are simply distasteful. Regular people generally don't think very much about the military or military matters. [65] The reasons for this are numerous. One reason described by Lt. Col Murakami of the Japanese Air Self Defense Force is the concept of kotodama. One tenant of Japanese culture is that if one talks about something, it might come true or might happen. [66] The word, kotodama is a Shinto word implying that words themselves have a spirit, and that this spirit can be dangerous. [67]

The Japanese like to avoid distasteful subjects if they perceive that they have a low likelihood of actually happening. In the United States, problems or weaknesses are addressed directly. For example, issues like teen pregnancy are discussed on networks, the radio, etc. In Japan, problems are approached differently. They like to hide or ignore problems until they reach crisis level. Once this level is reached, the generally slow moving government is able to put changes into action. [68]

It is a reasonable assertion to say that the lack of attention provided to terrorism or security issues in Japan spans their entire society. Japanese culture is generally very homogenous. Their entire culture promotes consensus. [69] They like to have everyone on board. [70] The society has even been labeled " . . . a culture that crushes individualism." [71] While this statement may be rather extreme, it is true that Japanese culture does not promote standouts. This aspect of Japanese culture is furthered by their educational programs. In the Japanese school system, "The emphasis is on fitting in, on following rules, and on rote memorization. Students are not encouraged to analyze or challenge; questions are not asked in Japanese classrooms." [72] Professor McCarty expands on the idea of Japanese cultural singularity in the following statement:

> It may also be assumed that the Japanese national interest on each issue is singular and obvious. Japan is not ready to face its own actual pluralism, as they would open an unwelcome can of worms. Have you heard of certain cultures who avoid conflicts in the first place because they do not have the social mechanisms to resolve conflicts once they are out in the open? Japan is one of those cultures, and so generally the lid is kept on controversial issues ala "see no evil" and etc. [73]

The lack of plurality in Japanese culture has a significant effect on how effectively they are able to deal with complex political or security issues.

It is apparent that in the past, the Japanese have avoided discussion regarding security issues. This is highlighted by the general ignorance and apathy regarding the threat of terrorism. It can also be concluded that this problem is manifested across the entire spectrum of Japanese society and culture. This is not likely to change drastically in the near future. The Japanese mind is not easily changed. [74] In general, Japanese simply do not like to alter their approach to things. [75] Professor McCarty notes that "They don't like change for its own sake, so they stick with something comfortable. The unpredictable or surprising often has a negative connotation in a land of typhoons, tsunami tidal waves, earthquakes and volcanic eruptions." [76]

New Trends in Japanese Thinking

Despite the fact that drastic changes in the Japanese approach to terrorism or security are not likely in the future, change has been slowly but surely creeping into the Japanese mindset. After the gulf crisis, and the end of the Cold War, people have been getting more realistic about security issues. [77] The younger generations seem to hold the consensus that a self-defense force is actually needed. [78] The percentage of members in the Japanese Diet who promoted the outdated pacifist stance regarding defense issues has been reduced from nearly 50% to less than 33%. [79] The Diet requires a two-thirds majority to alter the constitution, and the numbers of those willing to address defense issues are nearing that benchmark. [80] Lately, direct dialog regarding security issues is also a lot more common, and people are more willing to discuss things. [81] In Japanese politics today, while politicians must still be careful in choosing the words they use, it is no longer tantamount to political suicide to advocate necessary changes regarding security issues. [82] In addition, anti-military sentiment is ebbing. For example, students of the National Japanese Defense Academy, the "Boedaigaku" are actually required to wear uniforms when spending time off base.

While the Japanese mindset has been changing, experts express that more change is needed. Professor Miyasaka explains that in his opinion, the lack of attention paid to terrorism in Japan is a fault. [83] Dr. Katayama explains that because terrorism is a primarily psychological battle, it is important that members of Japanese society are not too afraid of terrorists or terrorist attacks. However, it is important that citizens remain conscious and ready to cooperate with authorities. He feels that Japanese consciousness needs to be raised. [84]

The Current Threat of Terrorism Worldwide

The need for the Japanese to increase both their vigilance and awareness of terrorism is intensified by the threat of terrorism worldwide. The worldwide threat of terrorism has become

both more volatile and more dangerous. Admittedly, the terrorist threat to Japan seems minor when compared with the threat to the United States. However, while the threat is low, a significant threat does exist. Japan has been attacked before, and may be attacked again. In this day and age, no country can afford to ignore the possibility of terrorism within its borders.

The number of terrorist incidents around the world in the past decade has been astounding. In the year 2001, there were 348 recorded incidents of international terrorism. In the year 2000, the number of attacks totaled 426. In the year 1999, 395 attacks were recorded, and in the four years prior, 1314 were recorded. In the years 2000 and 2001, 98 and 68 of these incidents occurred in Asia respectively. [85]

Equally astounding is the destructiveness of these respective incidents. In February of 1993, the World Trade Center in New York was bombed by a group led by Ramzi Ahred Yousef. The group killed six and injured 1,000. In 1993, a plot by Islamic extremists to bomb various places in New York was uncovered. In 1995, Aum Shinrikyo performed the sarin attack in Tokyo. In 1995, 1996, and 1997 a suicide bombing campaign by the Islamic Resistance Movement (HAMAS) killed over 100 people. In 1995, the Oklahoma city bombing by Timothy McVeigh killed 168. In June of 1996 the Khobar Towers were bombed, killing 19 and wounding 515. In August 1998, US embassies in Tanzania and Kenya were bombed, killing over 200. In 1999 Russia was victim to apartment bombings that killed several hundred. [86] The shock of the attack on the World Trade Center on September 11th, 2001 is still being felt worldwide. In the fall of 2001, 23 people contracted anthrax and 5 people were killed from letters laced with anthrax sent around the United States. [87]

The individual terrorists and their motivations for these actions are not easy to pigeonhole or explain. George Tenant, the Director of the CIA, offers the following comment on modern terrorists: " . . . I can tell you that they are a diverse lot motivated by many causes." [88] Terrorist attacks may be used for the purpose of gaining leverage on others due to death and destruction (Examples include the attack on the US Marine barracks in Beirut and the Khobar Towers,) to show the flag or to show their adversaries that they still pack a punch, or simply an act of revenge. [89] Motivation for terrorist action may even be darker than those previously described. In a speech by the Deputy Chief of the Counter Terrorist Center for the CIA, this darker motivation was described. "Even more visceral—and here we come to a mode of terrorist thinking that is furthest removed from the way you or I think—is the objective of inflicting as much pain and suffering as possible on an adversary simply because of hatred for that adversary." [90]

While the motivations for terrorism are varied, a noticeable trend among international terrorism is plainly visible. In short, terrorism is changing. The darker motivation for senseless death and destruction is becoming more and more popular among modern terrorists. "The reason is that "political violence," as we have traditionally understood it, is no longer the problem." [91] In the 1960's and 1970's terrorism seemed to involve carefully controlled violence. Today, terrorists are more indiscriminant. [92] "Instead of seeking to garner publicity or further a distinct political cause, the new perpetrators of acts of terrorism seem to view the maximization of casualties as a goal in itself." [93] In the 1990's, the number of international terrorist attacks declined, but the overall deaths caused by terrorism actually increased. [94] The following quote by the Deputy Chief of the DCI Counter Terrorist Center for the CIA in 1998 elaborates on the new nature of terrorism:

> But, while the frequency—the raw number of incidents—has declined, the lethality of terrorism has, if anything, been tending upward in recent years. There has been relatively less of the finely tuned use of terrorist tactics to acquire bargaining chips, and relatively more attempts to inflict high casualties, motivated by revenge or simple hatred. The signature terrorist act of the 1990s is not the airplane hijacking or group kidnapping, but rather the powerful truck bomb that levels buildings and kills people by the scores, if not by the hundreds. [95]

The horror of this indiscriminate violence was illustrated best by the attack on the World Trade Center on September 11th. Unfortunately, the attack may have only been a starting point for a new age of mass casualty terrorism. " . . . it raised the bar, the way the criteria for judging terrorism all of a sudden went from a record of 440 victims to seven times as many. It almost created two different categories of terrorists." [96] Indiscriminate, mass casualty terrorism is a real danger in today's world, and as Professor Miyasaka commented, no one will be surprised if it happens again. [97]

One of the primary reasons that terrorism has changed is the entrance of religion as a primary motivator for terrorist actions. Following the end of the Cold War, the secular gods or ideologies of the respective US and USSR camps no longer seemed to be viable. [98] An ideological void was created across the world. [99] Religion is increasingly filling this. [100] In some cases, religious ideology is being misused as an excuse to perpetrate mass violence. As Jean Zandars writes in his work "Assessing the Risk of Chemical

and Biological Weapons Proliferation to Terrorists,"

> Particularly the religious groups associated with apocalyptic millennialism, demptive fanaticism, or racist and ethnic hatred are said to find justification for their acts of violence in the higher authority of God. Because of their belief systems, mass casualties are not an impediment to the furtherance of their goals. [101]

Religion not only allows terrorists to broaden their support base, it simply makes it easier for them to justify mass casualty terrorism. [102] The Aum Shinrikyo cult and Osama Bin Laden's followers are prime examples of those who have used religion to justify mass casualty terrorism. While religion has become very influential upon terrorism, it must be noted that religion is not the only thing motivating terrorists across the world. As mentioned earlier, the motivations of terrorists are widely varied.

Terrorists have been changing in more ways than one. Not only have the types of their attacks, their motivations, and their justifications been changing, but the structures of their organizations have been changing too. Terrorist groups exhibit a type of social Darwinism; those that survive are consistently adapting, altering themselves, and learning from the mistakes of others. [103] A danger in the modern world are cellular groups of extremists who can commit an act of terrorism and then disband. [104] The trend over the past 15 years has been towards " . . . loosely linked transnational networks." [105] Due to better communications, information technology, and stronger weapons, smaller groups and individuals now have an increased capability for destruction. [106] This trend makes terrorists more volatile, harder to pin down, and more dangerous.

Today's networked and violently motivated terrorists are seeking to apply a new assortment of weapons in their attempts to wreak havoc. For today's terrorist, weapons primarily include conventional means such as suicide attacks and devices such as car bombs. [107] However, as stated by George Tennant, before the SSCI on 2 February 2000:

> Although terrorists we've preempted still appear to be relying on conventional weapons, we know that a number of groups are seeking chemical biological, radiological, or nuclear (CBRN) agents. We are aware of several instances in which terrorists have contemplated using these materials. [108]

The attack by the Aum cult in 1995 broke the stigma against using Weapons of Mass Destruction (WMD), [109] and the current danger of such attacks is significant. It is the opinion of Ashton Carter, former assistant Secretary of Defense for the United States and John Deutch, former Director of Central Intelligence, that "The danger of weapons of mass destruction being used against America and its allies is greater now than at any time since the Cuban Missile Crisis of 1962." [110]

The threat of terrorist acquisition and use of WMD includes a three tiered threat composed of nuclear, biological and chemical weapons. Each of these tiers is a unique threat in itself and has different factors influencing their possible use by terrorists. Nuclear weapons are often the first thing to come to mind when people consider WMD. Opinions differ regarding the threat of terrorists gaining access to and using a nuclear warhead. According to Jason Pate and Adam Dolnik, Senior Research Associate of the WMD Terrorism Project at the Center for NonProliferation Studies at the Monterey Institute of International Studies, "There appears to be an inverse relationship between the motivation to kill a large amount of people and the ability to do so." [111] The organizations that have the resources and support base to acquire nuclear weapons would risk losing their support base in the backlash from a nuclear incident. [112] Thus, those who would use such weapons are generally small groups or individuals, and they simply don't have the resources to access these weapons. [113]

Unfortunately, this is not always true, especially when one considers the threat of religiously motivated terrorist groups. The Japanese cult Aum Shinrikyo looked into purchasing nuclear weapons and a cult member actually found several prices at which he could buy a nuclear weapon; the cheapest being 15 million dollars. [114] It must be noted that the chances of a terrorist group obtaining a ready made nuclear warhead are small, and construction is very difficult. [115] But, for those who are motivated, the possibility of acquiring small amounts of weapons grade nuclear material is quite realistic. [116] In addition, the knowledge and expertise required to put this material to use may be available if the price is right.

Russia is an ample shopping ground for any terrorist group seeking to obtain nuclear materials. Russia has stockpiles of 1,100 metric tons of highly enriched uranium and 160 metric tons of plutonium. [117] The security for these stockpiles is extremely lax. In many places, basic security items like fences or locks are not adequate, and guards go for months without pay. [118]

> There have been no confirmed reports of missing or stolen former soviet nuclear weapons. Still, there is ample evidence of a significant black market in nuclear materials. The International Atomic Energy Agency (IAEA) has reported 175 nuclear smuggling incidents since 1993, 18 of

> which involved highly enriched uranium, the key ingredient in an atomic bomb and the most dangerous product on the nuclear black market. [119]

According to George tennat,

> Making matters worse, societal and economic stress in Russia seems likely to grow, raising even more concerns about the security of nuclear weapons and fissile material. Although we have not had recent reports of weapons usable nuclear material missing in Russia, what we have noticed are reports of strikes, lax discipline, and poor moral, and criminal activity at nuclear facilities. For me . . . these are alarm bells that warrant our closest attention and concern. [120]

The world considers the danger of nuclear materials being smuggled out of Russia so great that over the next 10 years, G-8 countries are planning to spend 20 billion dollars to help former Soviet republics destroy and protect WMD stockpiles. [121]

In addition to possibly gaining nuclear material, terrorists may have access to the expertise needed to use the material as a weapon. In Russia, due to economic problems, nuclear technicians at times can't even afford food. [122] This leads to the danger that these technicians may be bought off, resulting in an expertise "brain drain" to those who can afford it. [123] This possibility is very real, and was demonstrated by the Aum Shinrikyo doomsday cult. The cult actually tried to solicit students from Moscow State University and underpaid nuclear scientists. Luckily, they failed. In the year 2000, the Taliban also tried to recruit a former Soviet nuclear expert. Thankfully, they too were unsuccessful. [124]

The danger of terrorists building or purchasing a nuclear warhead is not the only threat that terrorists pose involving nuclear material. Should terrorists gain access to some amount of expertise, and some form of nuclear material (not necessarily the type used to build nuclear weapons), it is possible that terrorists could create a "dirty bomb." [125] This would be a conventional bomb laced with nuclear material that would release radiation along with the standard explosion. [126] Depending on the bomb's contraction, the danger posed by dirty bombs may not be much greater than that of a conventional weapon. [127] However, the possible psychological impact of such a weapon and the resulting contamination are significant enough that it is considered a weapons of mass destruction. [128]

Other elements of the WMD threat include biological and chemical weapons. Like the danger posed by a nuclear terrorist attack, the threat of a biological or chemical attack by a terrorist entity is limited. However, it is significant enough to warrant attention. Biological weapons are difficult to produce and difficult to employ. It is the opinion of Jean Pascal Zandars, as expressed in the work "Assessing the Risk of Chemical and biological Weapons Proliferation to Terrorists," that " . . . only a vertically organized, highly integrated, and ideologically uniform group appears to have the capacity to setup and operate a large-volume production line for chemical or biological weapons in absolute secrecy." [129] Even Aum Shinrikyo, a group that certainly fits that description, failed to successfully employ biological weapons. The cult attempted to produce clostidium botulinum, a bacteria that creates a dangerous toxin. [130] Due to a lack of the proper equipment, their attempt failed. [131]

> Despite ample budgetary, equipment, and expertise resources, and years in which to develop their CBW program, Aum Shinrikyo failed to use biological agents effectively, and achieved relatively limited success with their chemical program. Aspirant CBW terrorists may well find these observations a deterrent, rather than an encouragement from CBW acquisition activities. [132]

This information can be misleading, however, if it leads one to believe that chemical or biological terrorists attacks are not going to happen. The successful sarin attack by the Aum cult proved that WMD chemical attacks are a very real danger. In addition, should a terrorist group be less ambitious, it is possible that they could use first generation (non-nerve agent) chemical warfare agents such as mustard gas. [133] These weapons are easier to produce and arouse less suspicion than a substance like sarin. [134] The anthrax attacks in the United States demonstrate that biological attacks are a viable threat. Luckily, the attacks were not designed to cause mass casualties (the letter announced that it was, in fact, anthrax, and the use of letters themselves for dispensation limited the number of casualties). [135] Future attacks could be worse. [136]

The nature of international terrorism is changing and the danger that terrorists may use WMD is very real. For these reasons, terrorism is a threat that deserves the utmost concern. This concern is especially warranted for the United States and her allies, including Japan. While the cause for alarm in Japan is considerably less than for that of the United States, the threat in Asia, and to Japan specifically, is viable and warrants serious consideration.

The Current Threat of Terrorism to Japan Specifically

Any realist must note that the terrorist threat to Japan itself is limited. In fact, there are many significant factors that minimize the threat

against Japan. The domestic threat is narrow. There are no known terrorist organizations in Japan with the capability to initiate a continuous campaign of terrorism. [137] In addition, according to Dr. Katayama, religious terrorism is not a danger in Japan. [138] He feels that the Aum Shinrikyo cult was unique, and also notes that they are currently under strict surveillance. [139] He does not predict that they will rise again. [140]

The threat from alien terrorists is also limited. Professor Miyasaka explains that "[he does] not see the movement of foreign terrorist organizations in Japan." [141] According to Dr. Katayama, there are not many foreign terrorist groups that would want to attack Japan specifically, when compared with the United States. [142] There are currently no cells of Al Qaeda or other Islamic extremists in Japan. [143] Japan simply is not an environment that would be inviting for foreign terrorists. Japan is a very homogenous society. [144] The culture pervading in this homogenous society simply does not embrace foreigners. [145] This would make it a hard place for foreign terrorists to operate. [146] They would have a difficult time blending in or being conspicuous. In addition, Japanese police are networked very well; [147] this implies that any intrusions by foreign terrorist groups would not escape attention. In addition, Japan is not a cheap country to live or operate in. It would be an expensive location for a terrorist to base operations from. [148]

It can safely be asserted that the Japanese nation is not a "hot target" for the terrorists of the world. However, it is an ally of the United States, a country that could be considered a lightning rod for terrorism. As experts have noted, " . . . adversaries of the U.S. will increasingly use asymmetrical threats against perceived weak links in the American armor—including U.S. allies." [149] Japan and the United States currently have a bilateral defense agreement, and there are several U.S. military bases in Japan. One would not be out of line to beg the question "could the U.S. military bases within Japan draw terrorist attacks?" Thankfully, upon evaluation, it can be concluded that while a terrorist action on a U.S. base in Japan may happen, it is not likely.

The United States is rarely attacked directly, on its own soil. [150] September 11th was the first occurrence of such an attack since Pearl Harbor, nearly 60 years prior. [151] U.S. installations overseas are thus possible targets for violent action. Fortunately, according to professor Miyasaka, U.S. bases in Japan are not likely targets for terrorism. [152] There are left wing terrorist organizations and extremists in Japan, for example the Chukakuha and the Kakumaruha. [153] These organizations hate the U.S. military presence in Japan. [154] However, they are not known to have the power to attack US bases. [155] This limits the indigenous threat. The international threat is limited as well. As explained by Commander Belay, the U.S.-Japan alliance is not an integral part of the war on terrorism. [156] An attack on the U.S.-Japan alliance would not hit the United States between the eyes. [157] This decreases the targeting desirability of U.S. bases in Japan. It must be noted, however, that the U.S. Naval Base in Yokosuka was actually subjected to a biological attack in 1990 by the Aum cult, [158] and the possibility of a future terrorist attack cannot be completely ruled out.

While the threat of terrorist action in Japan is limited, it is by no means non-existent. There are areas in which Japan may be at risk, and as the 1995 sarin attacked proved, not all terrorism can be anticipated. Dangers faced by Japan include the threat posed by deranged individuals, attacks to gain ransoms, and antagonistic actions by North Korea. Each of these dangers is significant and should not be overlooked.

Dr. Katayama explains that right wing individuals pose a viable danger within Japanese society. These individuals can be seen as similar to the Unabomber. They may be unhappy with society or desire some sort of revenge in return for a perceived wrong. Such persons may be inclined to undertake terrorist action. These dangerous individuals can be hard to identify, and because of their willingness to be killed, can be even more dangerous than leftists. Dr. Katayama also notes that due to technological innovations, it may be possible for an individual to obtain or produce some form of chemical or biological substance with which a terrorist action may be performed. [159]

Another very real threat to Japan and her citizens are acts of crime or terrorism designed to obtain ransom payments. [160] Many Japanese citizens are well paid, and ransom acts on citizens abroad, in areas such as central Asia or Columbia for example, are a danger. [161] In the past, Japanese businessmen have been abducted; these abductions sometimes involved terrorists. [162]

North Korea also poses a significant threat to Japanese security. North Korea is one of seven states known to sponsor terrorism. [163] North Korea itself has helped to organize terrorist actions. In the 1980's North Korea helped organize the assassination of South Korean cabinet members. [164] In addition, "Some evidence also suggests [North Korea] in 1999 may have sold weapons directly or indirectly to terrorist groups." [165] When one considers the fact that North Korea locally manufactures various chemical weapons, [166] the danger posed by such sales is startling.

North Korea's belligerence has not been solely directed against South Korea. In the past, North Korea has offered support to terrorists who have acted against Japan. The North Korean

government currently provides a "safe haven" for four individuals who hijacked a Japanese Airlines flight to North Korea in 1970. [167] Recently, North Korea has continued to antagonize the Japanese nation. In the 1990's, North Korea launched ballistic missile tests over Japanese territory twice, once in August of 1998 and once in May of 1993. [168] Most recently, in March of 1999, North Korean spy boats entered Japanese territorial waters. [169]

According to Dr. Katayama, direct terrorist action against Japan sponsored by Korea is not very likely due to the threat of American retaliation. [170] However, this past Summer, Dr. Katayama mentioned that North Korea posed a threat to Japan as a potential kidnapper of Japanese citizens. [171] He explained that there was a danger that North Korea would abduct Japanese and use them as teaching aids to spies in training. [172] These suspicions were confirmed recently in talks between Kim Jong Il and Koizumi, the Japanese Prime Minister. Kim Jong Il confirmed that 10 Japanese citizens had been abducted, only four of which are still alive. [173]
Some feel that the North Korean leader's open discussion of this issue may signal that the danger of North Korean antagonist action is subsiding. According to writers at CNN:

Japanese officials say there is an indication that Pyongyang's usual tough stance was softening -- a sign the isolated and impoverished communist nation was looking to strike a deal with Tokyo. "We sense North Korea has changed, expressing more willingness to listen to our proposals and to talk, "Japanese Foreign Minister Kenji Hiramatsu told reporters on Monday. Observers say North Korea is also worried about its relationship with the United States since it was branded as part of an "axis of evil" along with Iran and Iraq by U.S. President George W. Bush in January. [174]

Such statements seem to be cause for optimism. However, a few friendly statements do not eliminate North Korea's belligerent track record, nor do they negate the security threat posed by the wayward nation. North Korea's past actions, and the fact that North Korea actually kidnapped Japanese citizens, provide even more reasons for Japan to take terrorism and asymmetric threats very seriously.

Japanese Lack of Action

Terrorist threats to Japanese security are as real as they are dangerous. These threats lie in the context of a world environment where terrorism is taking on a new and more deadly color and the destructive tools that terrorists may employ are both horrific and available. In this environment, many countries have developed policies to both respond to and deter terrorist action. Unfortunately, in this arena, Japan is sorely behind. Japan's failure to develop effective policy in this area is a direct result of the lack of awareness or understanding of the terrorist threat on the part of Japanese society as a whole.

The idea of actively deterring terrorism is not revolutionary. In their work "Catastrophic Terrorism," as printed in Foreign Affairs in 1998, Ashton Carter and John Deutch convey the idea that terrorism may, in fact, be deterred. They wrote:

> At least three measures are needed to prevent and deter catastrophic terrorism: an international legal initiative outlawing the development or possession of weapons of mass destruction, a National Information Assurance Institute, and a stronger federal support for strategic risk analysis. [175]

Although some may dispute the effectiveness of its efforts, the US government has attempted to maintain a proactive policy in the prevention and deterrence of terrorists. In the work Terrorism: Prevention and Preparedness, (written prior to September 11th), Michael Green explained that the United States attempted to deter and pressure terrorists by not giving in to terrorist demands, singling them out, punishing state sponsors, bringing terrorists to justice, aiding other countries in anti-terrorism, and preparing for worst case scenarios. [176] Efforts made by both the United States and other countries have been increased since the attack on the World Trade Center. US efforts at deterrence have been translated into the new "war on terrorism." The prevention and elimination of terrorism is something that the American government has made plain that it feels is both possible and of the highest priority.

The action taken by the United States contrasts greatly with the lack of action undertaken by Japan. It seems that Japan does not even consider the deterrence of terrorists. Their intelligence capabilities are dwarfed by the United States, [177] and their military security emphasis is still on defending from Cold War style invasions. [178] Their internal security is also inadequate. While their police force performs actions to counteract dangerous groups or individuals, these actions are not designed for, nor suitable for the deterrence of terrorists. Japanese police like to maintain trust and support in their local areas. [179] Consequently, they do not like to cause disturbances. Rather than confronting antisocial groups, Japanese police forces prefer to contain them. [180] This containment policy is analogous to the international communist policy outlined by Kennan for the United States in the 1950s. [181] " . . . Japan does not eliminate antisocial organizations outright. It takes time to weaken the groups. For example, to counter the Kyokusa that flourished in the late 1960s, Japanese police have

been waiting for the movement's members to age." [182] Unfortunately, this type of approach will do nothing to deter possible terrorists. Professor Miyasaka explains that "The containment is . . . not based upon threat assessments but on Japan's strategic culture. The problem is that it is not enough to prevent and combat future terrorism; some will act beyond borders, ally with foreign groups, become interested in WMD, and misuse computers." [183] The Japanese did establish local anti-terrorism squads (or SATs) in 1977, however, they hesitate to use them to the point that " . . . the Japanese government has continued to avoid drastic measures as long as possible, even if hostages and/or policemen were killed." [184] Due to Japan's lack of willingness to employ them, such squads do not add much to Japan's internal security, nor are they an effective deterrent.

A Problem that Needs to be Solved

Japan does not effectively deter or defend against terrorist action. As explained by Professor Miyasaka, Japanese failure to develop effective policy is a direct result of the society's general lack of understanding, definition, or threat perception in regards to terrorism. [185] Due to the lack of awareness or understanding within Japanese society, the Japanese government feels very little pressure to deal with the issue. This problem needs to be solved. The threat to the Japanese nation as a whole, and her individual citizens requires that action be taken. In a country where the government requires either crisis or overwhelming consensus to act decisively, [186] one would desperately hope that both the Japanese citizens and the Japanese government can open their eyes before another mass casualty attack forces the issue upon them.

Bibliography

Interviews:

Interview. Commander John Belay. Bilateral Plans Action Officer for US Forces Japan. USAFA Cadets Kaly McKenna, Ryan Jodoi, and Jason Kramer. 3 July 2002.

Interview. Dr. Katayama, Senior Research Fellow, National Institute for Defense Studies, Japan Defense Agency. USAFA Cadets Kaly McKenna and Jason Kramer. 5 July 2002.

Interview. Lt. Colonel Hiroshi Murakami, Japan Air Self Defense Force. USAFA Cadets Kaly McKenna and Jason Kramer. 26 June 2002.

Interview. Mr. Dennis R. Pitts. Chief, History Office, Fifth Air Force and 374th Air Lift Wing. USAFA Cadets Kaly McKenna, Ryan Jodoi and Jason Kramer. 25 June 2002.

Interview. Mr. Nakai. USFJ J-5 Office. USAFA Cadets Kaly McKenna, Ryan Jodoi, and Jason Kramer. 27 June 2002.

Interview. Senator Yoshimasa Hayashi, Member of Japan's House of Councilors. Lt Col Cunico, USAF and USAFA Cadets Kaly McKenna, Ryan Jodoi and Jason Kramer. 8 July 2002.

Interview. Via Email. Steve McCarty. Japan President, World Association for Online Education. Professor Kagawa Junior College. USAFA Cadets Kaly McKenna and Jason Kramer. 28 June 2002.

Interview. Professor Naofumi Miyasaka, Associate Professor of the Graduate School of Security Studies at Japan's National Defense Academy. USAFA Cadets Kaly McKenna and Jason Kramer. 30 May 2002.

Interview. Via Email. Professor Naofumi Miyasaka, Associate Professor of the Graduate School of Security Studies at Japan's National Defense Academy. USAFA Cadets Kaly McKenna and Jason Kramer. 1 July 2002.

Other Sources:

Bellamny, Christopher. "The Rise of the DIY Terrorist." The Independent (London). 31 July 1996. Accessed 9 May 2002. Lexis Nexis.

Carter, Ashton, John Deutch and Philip Zelikow. "Catastrophic Terrorism: Talking the New Danger." Foreign Affairs. Nov/Dec 1998. Vol. 77. Issue 6, Page 80. Accessed 1 October 2002. <http://www.foreignaffairs.org/19981101faessay1434/ashton-carter-john-deutch-philip-zelikow/catastrophic-terrorism-tackling-the-new-danger.html>. Article page 1.

"Central Intelligence Agency- Public Statements of Potential terrorist use of Chemical, Biological, Radiological, and Nuclear (CBRN) Agents Since July 1997." Accessed 1 August 2002.

"Chemical Terrorism in Japan: The Matsumoto and Tokyo Incidents." Part of a working draft of the WHO publication "Health Aspects of Biological and Chemical Weapons," 2nd. Ed. Accessed 9May2002.<http://www.opcw.org/

resp/html/japan.html>.

"Combating Proliferation of Weapons of Mass Destruction." Report of the commission to Assess the Organization of the Federal Government to Combat the Proliferation of Weapons of Mass Destruction. 14 July 1999. Accessed 1 October 2002 . <http://www.fas.org/spp/starwars/program/deutch/11910book.pdf>.

Cordesman, Anthony H. and Arleigh A. Burke. Defending America: Terrorist Organizations and States and Weapons of Mass Destruction. Center for Strategic and International Studies. 24 September 2001. Accessed 3 July 2002. <http://www.csis.org/burke/hd/reports/TerrOrgs%20010924ud.pdf>.

"Dirty Bombs." Terrorism- Questions + Answers, by the Council on Foreign Relations. Publishers of Foreign Affairs. Accessed 19 September 2002 <http://www.terrorismanswers.com/weapons/dirtybomb.html>.

Dr. Karman, Eli. "Intelligence and the Challenge of Terrorism in the 21st Century." 5 November 1998. A paper presented at the conference "A Counter-Terrorism Strategy for the 21st Century: The Role of Intelligence" At the Morris E. Curiel Center for International Studies of the Tel Aviv University on Nov 1-2 1998.

Falkenrah, Richard A. and Robyn Pangi. John F. Kennedy School of Government at Harvard University. "Preparing For the Worst: Mitigating the consequences of Chemical and Biological Terrorism." A Paper prepared for the round table symposium on "Terrorism: Prevention and Preparedness" October 30-31, 2000. Tokyo, Japan. Published in Terrorism: Prevention & Preparedness, New Approaches to U.S.-Japan Security Cooperation. Japan Society Inc. 2001.

Green, Michael. Terrorism: Prevention & Preparedness, New Approaches to U.S.-Japan Security Cooperation. Japan Society Inc. 2001.

Homer-Dixon, Thomas. "The Rise of Complex Terrorism." Foreign Policy Magazine. Accessed 2 July 2002. <http://www.foregnPolicy.com/issue_janfeb_2002/homer-dixon.html>.

"Is the West Doing Enough to Keep Former Soviet Weapons of Mass Destruction Out of Terrorists' Hands?" Terrorism- Questions and Answers by the Council on Foreign Relations, publishers of Foreign Affairs. Accessed 1 July 2002. <http://www.terrorismanswers.com/home>.

Kaplan, David E and Andrew Marshall. The Cult at the End of the World: The Terrifying Story of the Aum Doomsday cult, from the Subways of Tokyo to the Nuclear Arsenals of Russia. New York: Crown Publishers, 1996.

"Loose Nukes." Terrorism- Questions and Answers by the Council on Foreign Relations, publishers of Foreign Affairs. Accessed 1 July 2002. < http://www.terrorismanswers.com/weapons/loosenukes.html>.

"Loose Nukes." Terrorism- Questions + Answers, by the Council on Foreign Relations. Publishers of Foreign Affairs. Accessed 1 July 2002 <http://www.terrorismanswers.com/weapons/loosenukes2.html>.

McCarty, Steve. "Another Against the Other: Terrorism Through Japanese Lenses." Accessed 28 June 2002.<http://www.nyu.edu/classes/keefer/joe/mccarthy1.html>.

Miyasaka, Naofumi. "Terrorism and Antiterrorism in Japan: aum shinrikyo and after." A Paper Prepared for Roundtable Symposium on Terrorism: Prevention and Preparedness. October 30-31, 2000. Tokyo Japan. Printed in Terrorism: Prevention & Preparedness, New Approaches to U.S.-Japan Security Cooperation. Japan Society Inc. 2001.

"North Korea Admits Japanese Kidnappings." CNN.COM. Posted 17 September 2002. Accessed 20 September 2002. <http://www.cnn.com/2002/WORLD/asiapcf/east/09/17/nkorea.japan/index.html>.

Pate, Jason. Senior Research Associate and Manager Weapons of Mass Destruction Terrorism Project Monterey Institute of International Studies. "Anthrax and Mass-Casualty Terrorism: What is the Bioterrorist Threat After September 11?" Accessed 2 July 2002. <http://usinfo.state.gov/journals/itps/1101/ijpe/pj63pate-2.hm>.

Patterns of Global Terrorism 2001. "Africa, South Asia, and East Asia

Overviews." US Department of State. Accessed 25 June 2002. <http://www.state.gov/documents/organization/10290.pdf>.

Patterns of Global Terrorism 2001. "Appendix B: background Information on Designated Foreign Terrorist Organizations." US Department of State. Accessed 25 June 2002. <http://www.state.gov/s/ct/rls/pg+rpt/2001/pdf1>.

Patterns of Global Terrorism 2001. "Appendix I: Statistical Review." Published by US Department of State. Located at FindLaw.com. Accessed 29 October 2002. <http://news.findlaw.com/hdocs/docs/dos/trrpt2001/dostrrpt2001p17.pdf >.

Patterns of Global Terrorism 2001. "Overview of State-Sponsored Terrorism." US Department of State. Accessed 25 June 2002. <http://www.state.gov/documents/organization/10296.pdf>.

Speech by Deputy Chief, DCI Counter Terrorist Center. Central Intelligence Agency. 11 November 1998. World Affairs Council, Naples, Fl. Accessed 9 May 2002. <http://www.cia.gov/cia/di/speeches/int/terr.html>.

Struck, Doug. "At World Cup, Terrorism is Biggest Foe: Security Extraordinary for Month-Long Tournament." WashingtonPost.com. 31 May 2002. Accessed 1 July 2002. <http://www.washingtonpost.com/ac2/wp-dyn?pagename=article&node=&contentId=a36525>.

Struck, Doug. "At World Cup, Terrorism is Biggest Foe: Security Extraordinary for Month-Long Tournament." WashingtonPost.com. 31 May 2002. Accessed 1 July 2002. <http://www.washingtonpost.com/wp-dyn/articles/A36525-2002May30.html >.

"The Anthrax Letters." Accessed 1 July 2002<http://www.terrorismissues.com/weaons/anthraxletters.html>.

"Tighten Security, Say Japan officials." United Press International. 27 June 1995. Lexis-Nexis. Accessed 9 May 2002.

"US Congressional Testimony. Disarmament Diplomacy—Issue Number 34. Statement by George J Tennant, Director of the Central Intelligence Agency (CIA), to a senate Armed Services Committee hearing on Projected National Security Threats." 2 February 1999. Accessed 26 June 2002. <http://www.acronym.org.uk/34doc4.htm>.

Zandars, Jean Pascal. "Assessing the Risk of Chemical and Biological Weapons Proliferation to Terrorists." The Non Proliferation Review. Fall 1999. Peace Research Institute. Accessed 1 October 2002. <.http://cns.miis.edu/pubs/npr/vol06/64/zander64.pdf>.

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(Endnotes)

[1] Carter, Ashton, John Deutch and Philip Zelikow. "Catastrophic Terrorism: Talking the New Danger." Foreign Affairs. Nov/Dec 1998. Vol. 77. Issue 6, Page 80. Accessed 1 October 2002. <>. Article page 1.

[2] Red Army information in this paragraph was found in the following source: Cordesman, Anthony H. and Arleigh A. Burke. "Defending America: Terrorist Organizations and States and Weapons of Mass Destruction". 24 September 2001. Center for Strategic and International Studies. Accessed 3 July 2002. <http://www.csis.org/burke/hd/reports/TerrOrgs%20010924ud.pdf>

[3]Kaplan, David E and Andrew Marshall. *The Cult at the End of the World: The Terrifying Story of the Aum Doomsday cult, from the Subways of Tokyo to the Nuclear Arsenals of Russia*. New York: Crown Publishers, 1996. Page 58.

[4] Kaplan. Pages 93-94.

[5]'s National Defense Academy. USAFA Cadets Kaly McKenna and Jason Kramer. 30 May 2002.

[6] Kaplan. Pages 140-144.

[7] Kaplan. Page 1.
[8] Patterns of Global Terrorism 2001. "Appendix B: background Information on Designated Foreign Terrorist Organizations." US Department of State. Accessed 25 June 2002. <http://www.state.gov/s/ct/rls/pg+rpt/2001/pdf1>.
[9] "Tighten Security, Say Japan officials." United Press International. 27 June 1995. Lexis-Nexis. Accessed 9 May 2002.
[10] Green, Michael. *Terrorism: Prevention & Preparedness, New Approaches to U.S.-Japan Security Cooperation*. Japan Society Inc. 2001. Page 18.
[11] Miyasaka, Naofumi. "Terrorism and Antiterrorism in Japan: aum shinrikyo and after." A Paper Prepared for Roundtable Symposium on *Terrorism: Prevention and Preparedness*. October 30-31, 2000. Tokyo Japan. Printed in *Terrorism: Prevention & Preparedness, New Approaches to U.S.-Japan Security Cooperation*. Japan Society Inc. 2001. Page 74.
[12] McCarty, Steve. "Another Against the Other: Terrorism Through Japanese Lenses." Accessed 28 June 2002. <http://www.nyu.edu/classes/keefer/joe/mccarthy1.html>. Page 1.
[13] Information up to this point in this paragraph is from Interview. Professor Miyasaka. 30 May 2001.
[14] Interview. Dr. Katayama, Senior Research Fellow, National Institute for Defense Studies, Japan Defense Agency. USAFA Cadets Kaly McKenna and Jason Kramer. 5 July 2002.
[15]'s House of Councilors. Lt Col Cunico, USAF and USAFA Cadets Kaly McKenna, Ryan Jodoi and Jason Kramer. 8 July 2002.
[16] Interview. Miyasaka. 30 May 2002.
[17] Interview. Dr. Katayama.
[18] Miyasaka. "Terrorism and Antiterrorism in Japan: aum shinrikyo and after." Page 69.
[19] Interview. Miyasaka. 30 May 2002.
[20] Interview. Dr. Katayama.
[21] Interview. Dr. Katayama.
[22] Interview. Dr. Katayama.
[23] Information up to this point in paragraph from Interview. Miyasaka. 30 May 2002.
[24] Green. Page 39.
[25] Miyasaka. "Terrorism and Antiterrorism in Japan: aum shinrikyo and after." Page 76.
[26] Interview. Via Email. Steve McCarty. Japan President, World Association for Online Education. Professor Kagawa Junior College. USAFA Cadets Kaly McKenna and Jason Kramer. 28 June 2002.
[27] Interview. McCarty.
[28] Interview. Miyasaka. 30 May 2002.
[29] Green. Page 21.
[30] Miyasaka. "Terrorism and Antiterrorism in Japan: aum shinrikyo and after." Page 76.
[31] Miyasaka. "Terrorism and Antiterrorism in Japan: aum shinrikyo and after." Page 76.
[32]'s National Defense Academy. USAFA Cadets Kaly McKenna and Jason Kramer. 1 July 2002.
[33] Interview. Lt. Colonel Hiroshi Murakami, Japan Air Self Defense Force. USAFA Cadets Kaly McKenna and Jason Kramer. 26 June 2002.
[34] Interview. Lt. Col Murakami.
[35] Interview. Lt. Col Murakami.
[36] Green, page 20.
[37] Green, page 20.
[38] Miyasaka. "Terrorism and Antiterrorism in Japan: aum shinrikyo and after." Pages 73-74.
[39] Interview. Mr. Nakai. USFJ J-5 Office. USAFA Cadets Kaly McKenna, Ryan Jodoi, and Jason Kramer. 27 June 2002.
[40] Interview. Nakai.
[41] Interview. Nakai.
[42] Interview. Nakai.
[43] Struck, Doug. "At World Cup, Terrorism is Biggest Foe: Security Extraordinary for Month-Long Tournament." WashingtonPost.com. 31 May 2002. Accessed 1 July 2002. <http://www.washingtonpost.com/ac2/wp-dyn?pagename=article&node=&contentId=a36525>.
[44] Interview. Nakai.
[45] Interview. Nakai.
[46] Miyasaka. "Terrorism and Antiterrorism in Japan: aum shinrikyo and after." Page 72.
[47] Interview. Nakai.
[48] Interview. Mr. Dennis R. Pitts. Chief, History Office, Fifth Air Force and 374th Air Lift Wing. USAFA Cadets Kaly McKenna, Ryan Jodoi and Jason Kramer. 25 June 2002.
[49] Interview. Pitts.
[50] Interview. Pitts.
[51] Interview. McCarty.
[52] Interview. McCarty.
[53] McCarty. "Another Against the Other: Terrorism Through Japanese Lenses." Page 1.
[54] McCarty. "Another Against the Other: Terrorism Through Japanese Lenses." Page 1.
[55] Interview. Commander John Belay. Bilateral Plans Action Officer for US Forces Japan. USAFA Cadets Kaly McKenna, Ryan Jodoi, and Jason Kramer. 3 July 2002.
[56] Interview. Commander Belay.
[57] Interview. Pitts.
[58] Interview. Pitts.
[59] Interview. Nakai.
[60] Interview. Lt. Col. Murakami.
[61] Interview. Dr. Katayama.
[62] Interview. Dr. Katayama.
[63] Interview. Senator Hayashi.
[64] Interview. Dr. Katayama.
[65] Interview. Lt. Col. Murakami.
[66] Interview. Lt. Col. Murakami.
[67] Interview. Lt. Col. Murakami.
[68] All information in this paragraph is from Interview. Commander John Belay.
[69] Interview. Commander Belay.
[70] Interview. Commander Belay.
[71] Kaplan. Page 27.
[72] Kaplan. Page 27.

[73] Interview. McCarty.
[74] Interview. Miyasaka. 30 May 2001.
[75] Interview. Miyasaka. 30 May 2001.
[76] Interview. McCarty.
[77] Interview. Senator Hayashi.
[78] Interview. Senator Hayashi.
[79] Interview. Senator Hayashi.
[80] Interview. Senator Hayashi.
[81] Interview. Lt. Col. Murakami.
[82] Interview. Senator Hayashi.
[83] Interview. Miyasaka. 30 May 2002.
[84] Last three sentences from Interview. Dr. Katayama.
[85] Data is this paragraph is from *Patterns of Global Terrorism 2001*. "Appendix I: Statistical Review." Published by US Department of State. Located at FindLaw.com. Accessed 29 October 2002. <http://news.findlaw.com/hdocs/docs/dos/trrpt2001/dostrrpt2001p17.pdf >.
[86] Information on terrorist attacks from Falkenrah, Richard A. and Robyn Pangi. John F. Kennedy School of Government at Harvard University. "Preparing For the Worst: Mitigating the consequences of Chemical and Biological Terrorism." A Paper prepared for the round table symposium on "Terrorism: Prevention and Preparedness" October 30-31, 2000. Tokyo, Japan. Published in *Terrorism: Prevention & Preparedness, New Approaches to U.S.-Japan Security Cooperation*. Japan Society Inc. 2001. Pages 47-48.
[87] "The Anthrax Letters." Accessed 1 July 2002. <http://www.terrorismissues.com/weaons/anthraxletters.html>.
[88] Cordesman, Anthony H. and Arleigh A. Burke. *Defending America: Terrorist Organizations and States and Weapons of Mass Destruction.* Center for Strategic and International Studies. 24 September 2001. Accessed 3 July 2002. <http://www.csis.org/burke/hd/reports/TerrOrgs%20010924ud.pdf>. Page 5.
[89] Speech by Deputy Chief, DCI Counter Terrorist Center. Central Intelligence Agency. 11 November 1998. World Affairs Council, Naples, Fl. Accessed 9 May 2002. <>. Page 2.
[90] Speech by Deputy Chief, Page 3.
[91] Bellamny, Christopher. "The Rise of the DIY Terrorist." *The Independent (London).* 31 July 1996. Accessed 9 May 2002. Lexis Nexis. Page 1
[92] Last two sentences paraphrased from Falkanrah. Page 47.
[93] Zandars, Jean Pascal. "Assessing the Risk of Chemical and Biological Weapons Proliferation to Terrorists." The Non Proliferation Review. Fall 1999. Peace Research Institute. Accessed 1 October 2002. <.http://cns.miis.edu/pubs/npr/vol06/64/zander64.pdf>. Page 23.
[94] Dr. Karman, Eli. "Intelligence and the Challenge of Terrorism in the 21st Century." 5 November 1998. A paper presented at the conference "A Counter-Terrorism Strategy for the 21st Century: The Role of Intelligence" At the Morris E. Curiel Center for International Studies of the Tel Aviv University on Nov 1-2 1998.
[95] Speech by Deputy Chief, Page 3.
[96] "Religion and Terrorism." Interview with Dr. Bruce Hoffman. Religioscope. 22 February 2002. Accessed 2 July 2002. <http://www.religioscope.com/info/articles/003_Hoffman_terrorism.htm>.
[97] Interview. Miyasaka. 1 July 2002.
[98] "Religion and Terrorism." Page 3.
[99] "Religion and Terrorism." Page 3.
[100] "Religion and Terrorism." Page 2.
[101] Zandars. Page 23.
[102] "Religion and Terrorism." Pages 4-7.
[103] "Religion and Terrorism." Page 4.
[104] Speech by Deputy Chief. Pages 4-6.
[105] Pate, Jason. Senior Research Associate and Manager Weapons of Mass Destruction Terrorism Project Monterey Institute of International Studies. "Anthrax and Mass-Casualty Terrorism: What is the Bioterrorist Threat After September 11?" Accessed 2 July 2002. <http://usinfo.state.gov/journals/itps/1101/ijpe/pj63pate-2.hm>.
[106] Homer-Dixon, Thomas. "The Rise of Complex Terrorism." Foreign Policy Magazine. Accessed 2 July 2002. <http://www.foregnPolicy.com/issue_janfeb_2002/homer-dixon.html>. Page 2.
[107] Dr. Karman. Page 1.
[108] "Central Intelligence Agency- Public Statements of Potential terrorist use of Chemical, Biological, Radiological, and Nuclear (CBRN) Agents Since July 1997." Accessed 1 August 2002. <http://www.cia.gov/terrorism/pub_statements_cbrn.html>.
[109] Dr. Karmon. Page 1.
[110] Carter. Article Page2.
[111] Interview. Via Email. Jason Pate and Adam Dolnik. 3 July 2002. USAFA Cadets Jason Kramer and Kaly McKenna.
[112] Interview. Jason Pate and Adam Dolnik.
[113] Interview. Jason Pate and Adam Dolnik.
[114] Kaplan. Page 191.
[115] Interview. Jason Pate and Adam Dolnik.
[116] Interview. Jason Pate and Adam Dolnik.
[117] "Loose Nukes." Terrorism-Questions and Answers by the Council on Foreign Relations, publishers of *Foreign Affairs*. Accessed 1 July 2002. Page 1.
[118] "Loose Nukes." Page 1.
[119] "Loose Nukes." Page 1.
[120]"US Congressional Testimony. Disarmament Diplomacy—Issue Number 34. Statement by George J Tennant, Director of the Central Intelligence Agency (CIA), to a senate Armed Services Committee hearing on Projected National Security Threats." 2 February 1999. Accessed 26 June 2002. <http://www.acronym.org.uk/34doc4.htm>.
[121]' Hands?" Terrorism- Questions and Answers by the Council on Foreign Relations, publishers of *Foreign Affairs*. Accessed 1 July 2002. <http://www.terrorismanswers.com/home>. Page 1.

[122] "Combating Proliferation of Weapons of Mass Destruction." Report of the commission to Assess the Organization of the Federal Government to Combat the Proliferation of Weapons of Mass Destruction. 14 July 1999. Accessed 1 October 2002. Page 2.
[123] "Combating Proliferation of Weapons of Mass Destruction." Page 2.
[124] Information from the last four sentences from "Loose Nukes." Terrorism- Questions + Answers, by the Council on Foreign Relations. Publishers of *Foreign Affairs*. Accessed 1 July 2002. Page 2.
[125] "Dirty Bombs." Terrorism- Questions + Answers, by the Council on Foreign Relations. Publishers of *Foreign Affairs*. Accessed 19 September 2002. <http://www.terrorismanswers.com/weapons/dirtybomb.html>. Page 1.
[126] "Dirty Bombs." Page 1.
[127] "Dirty Bombs." Page 1.
[128] "Dirty Bombs." Page 1.
[129] Zandars. Page 31.
[130] Kaplan. Page 52.
[131] Kaplan. Page 53.
[132] "Chemical Terrorism in Japan: The Matsumoto and Tokyo Incidents." Part of a working draft of the WHO publication "Health Aspects of Biological and Chemical Weapons," 2nd. Ed. Accessed 9 May 2002. <http://www.opcw.org/resp/html/japan.html>.
[133] Zandars. Page 32.
[134] Zandars. Page 32.
[135] Pate, Jason. "Anthrax and Mass-Casualty terrorism: what is the Bioterrorist threat After September 11?" Page 2.
[136] Pate, Jason. "Anthrax and Mass-Casualty terrorism: what is the Bioterrorist threat After September 11?" Page 2.
[137] Interview. Dr. Katayama.
[138] Interview. Dr. Katayama.
[139] Interview. Dr. Katayama.
[140] Interview. Dr. Katayama.
[141] Interview. Via Email. Professor Miyasaka. 1 July 2002.
[142] Interview. Dr. Katayama.
[143] Interview. Miyasaka. 1 July 2002.
[144] Struck, Doug. "At World Cup, Terrorism is Biggest Foe: Security Extraordinary for Month-Long Tournament." WashingtonPost.com. 31 May 2002. Accessed 1 July 2002. < http://www.washingtonpost.com/wp-dyn/articles/A36525-2002May30.html >. Page 5.
[145] Interview. Commander Belay.
[146] Struck. Page 5.
[147] Interview. Commander Belay.
[148] Interview. Commander Belay.
[149] Green. Page 15.
[150] Interview. Nakai.
[151] Interview. Nakai.
[152] Interview. Miyasaka. 1 July 2002.
[153] Interview. Miyasaka. 1 July 2002.
[154] Interview. Miyasaka. 1 July 2002.
[155] Interview. Miyasaka. 1 July 2002.
[156] Interview. Commander Belay.
[157] Interview. Commander Belay.
[158] Interview. Miyasaka. 1 July 2002.
[159] All information in this paragraph up to this point was from Interview. Dr. Katayama.
[160] Interview. Miyasaka. 1 July 2002.
[161] Interview. Miyasaka. 1 July 2002.
[162] Interview. Dr. Katayama.
[163] *Patterns of Global Terrorism 2001.* "Africa, South Asia, and East Asia Overviews." US Department of State. Accessed 25 June 2002. <http://www.state.gov/documents/organization/10290.pdf>. Page 15.
[164] Interview. Dr. Katayama.
[165] Cordesman. Page 18.
[166] Cordesman. Page 22.
[167] *Patterns of Global Terrorism 2001.* "Overview of State-Sponsored Terrorism." US Department of State. Accessed 25 June 2002. <http://www.state.gov/documents/organization/10296.pdf>. Page 68.
[168] "Combating Proliferation of Weapons of Mass Destruction." Page 2.
[169] "Defense Agency Seeks Funds for SDF to Fight Terrorism." *Mainichi Daily News*. 4 August 1999. Accessed 9 May 2002. Lexis-Nexis.
[170] Interview. Dr. Katayama.
[171] Interview. Dr. Katayama.
[172] Interview. Dr. Katayama.
[173] "North Korea Admits Japanese Kidnappings." CNN.COM. Posted 17 September 2002. Accessed 20 September 2002. <http://www.cnn.com/2002/WORLD/asiapcf/east/09/17/nkorea.japan/index.html>.
[174] "North Korea Admits Japanese Kidnappings."
[175] Carter. Article Page5.
[176] Green. Pages 18-19.
[177] Interview. Nakai.
[178] Interview. Miyasaka. 30 May 2002.
[179] Miyasaka, Naofumi. "Terrorism and Antiterrorism in Japan: aum shinrikyo and after." Page 77.
[180] Miyasaka, Naofumi. "Terrorism and Antiterrorism in Japan: aum shinrikyo and after." Page 77.
[181] Miyasaka, Naofumi. "Terrorism and Antiterrorism in Japan: aum shinrikyo and after." Page 77.
[182] Miyasaka, Naofumi. "Terrorism and Antiterrorism in Japan: aum shinrikyo and after." Page 77.
[183] Miyasaka, Naofumi. "Terrorism and Antiterrorism in Japan: aum shinrikyo and after." Pages 77-78.
[184] Miyasaka, Naofumi. "Terrorism and Antiterrorism in Japan: aum shinrikyo and after." Page 74.
[185] Interview. Miyasaka. 30 May 2002.
[186] Interview Commander Belay.

"You shall judge a man by his foes as well as by his friends."

Joseph Conrad

The Intelligence World and the Prometheus Process

by C2C P.J. Davis

Since September 11th the American intelligence community has come under attack from many different quarters in light of a perceived failure to detect and interdict the terrorist organization, Al Queda. Though much of the criticism is arguably unwarranted and unfair, any major intelligence failure should provide cause for reflection on the current system and investigation into potential areas for improvement. In contrast to the failures of Sept. 11th, the Desert Storm air campaign is one of history's most successful operations. Creator of the campaign, retired Col. John Warden, took the lessons of his Air Force career and applies them to the business world through the Prometheus Process. Col. Warden's Prometheus Process possesses elements of strategy and thought that offer potential keys to fixing the shortcomings of American's intelligence community.

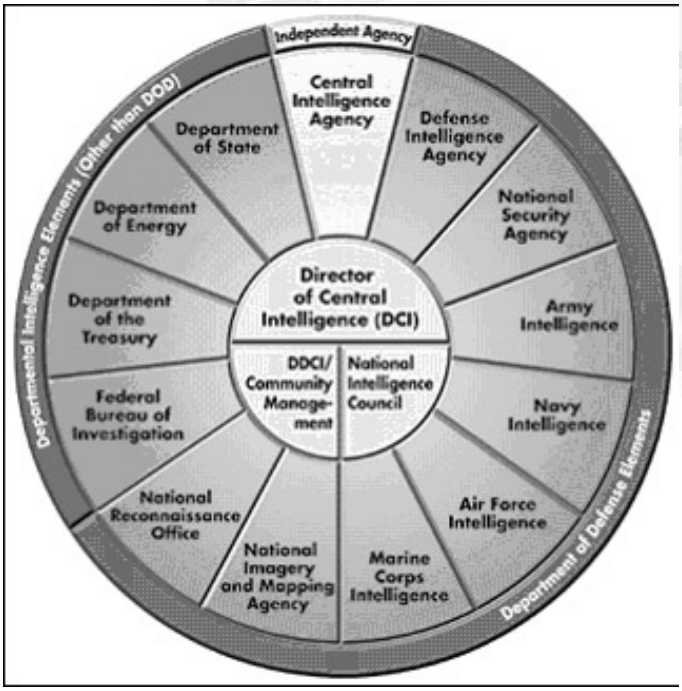

Fig 1. Factbook on Intelligence: The Intelligence Community

Problems with Intelligence

One particular problem with the current intelligence community is the very nature of the modern world. Until 1991 and the fall of the Soviet Union, the intelligence community was postured to meet one threat, that of communism. The majority of America's foreign efforts were directly or indirectly targeted to counter Soviet influence. The Soviet threat was relatively well known and based on the existence of Russia as a rational state actor, primarily Westphalian in nature. Yet, 1991 changed the world at a significantly fundamental level, ushering in a new age of non-state actors, rogue states, and irrational fundamentalism. Despite a new world order, the intelligence community continues to operate largely under the direction of President Reagan's 1981 Executive Order 12333 (Shulsky, Schmitt 202). Russ Travers states in "The Coming Intelligence Failure," "Now, no agency has either the critical mass of analysts or, in most cases, the charter to look in depth at the political, military, social, economic, and cultural aspects of a problem. In the end, the lack of fusion and integration capability means that the IC [Intelligence Community] [1] "whole" is substantially less than the sum of its parts" (Travers). As a relic of the Cold War, E.O. 12333 defines an intelligence community inadequately structured to cope with the rapidly changing post Cold War world and the new threats that face the United States.

Significant to the intelligence community's inability to cope with a rapidly changing world is the large number of agencies involved in either intelligence collection or analysis. Fig. 1 illustrates the basic structure of the intelligence community.

In theory, the Director of Central Intelligence is "the primary adviser to the President and the National Security Council on national foreign intelligence matters" (DCI and his Principal Deputies). The CIA website says of the director, "Executive Order 12333, issued by President Reagan on 4 December 1981, gives the DCI authority to develop and implement the National Foreign Intelligence Program and to coordinate the tasking of all Intelligence Community collection elements" (DCI and his Principal Deputies). Yet, despite the important role of the DCI, Fig. 1 illustrates the extreme decentralization of the intelligence community to such a point that the DCI does not directly control all the assets necessary to provide the President with an overall intelligence perspective on the world. This shortcoming can result in missed opportunities for sharing information and the lack of a complete intelligence picture, evidenced by Sept. 11th.

One specific current problem in the IC community is a distinct lack of human intelligence (HUMINT) capabilities. A July 2002 report created by the Subcommittee on Terrorism and Homeland Security of the House Permanent Select Committee on Intelligence states:

> CIA did not sufficiently penetrate the al-Qa'ida organization before September 11th. Because of the perceived reduction in the threat environment in the early to mid 1990's, and the concomitant reduction in resources for basic human intelligence collection there were fewer operations officers, fewer stations, fewer agents, and fewer intelligence reports produced" (After-

good).

The Committee's criticism echoes widely held sentiment in the post Sept. 11th world. The solution, according to Committee members is that, "CIA leadership must ensure that HUMINT collection remains a central core competency of the agency…More core collectors need to be put on the streets" (Aftergood). The lack of effective HUMINT demands an institutional change within CIA and the intelligence community as a whole.

A second issue related to the intelligence community is the poor performance of the FBI prior to Sept. 11th in regards to information sharing. The Subcommittee on Terrorism and Homeland Security says of the FBI, "FBI's main problem going forward is to overcome its information sharing failures" (Aftergood). In order to fix this shortcoming, the report goes on to suggest that, "'Ensuring adequate information sharing' should be communicated throughout the Bureau as the Director's top priority…" (Aftergood). Inability to share information, while a shortcoming of the FBI specifically, is also an entrenched aspect of the intelligence community as a whole. Compartmentalization and "need to know" requirements prevent the kind of information overlap that would aid in a comprehensive intelligence picture across agency boundaries.

The Prometheus Process

In 2002, Col. John Warden, principal architect of the 1991 Gulf War air campaign co-authored a book titled Winning in Fast Time. Col. Warden's work details a technique targeted at the business world called the Prometheus Process. Winning in Fast Time describes the Prometheus Process as a "systematic and proven process for designing winning strategies," making the claim that, "You won't win in the twenty-first century by merely reacting to change…To win, you must decide what you want your tomorrow to be, and then make it happen faster than the rate of change in your competitive environment" (Warden, Russell 5). The Prometheus process is generally organized under the four broad labels of Design the Future, Target for Success, Campaign to Win, and Finish with Finesse (Warden, Russell xi). The four disciplines are defined as follows:

Design the Future –

Winning in Fast Time describes Design the Future as, "about painting a clear and compelling picture of your destination, measuring strategic success, and defining the rules of conduct for the organization" (Warden, Russell 47).

Target For Success –

Target For Success is," about selecting the right targets for action using a powerful system model–what we will call, in Chapter 9, the "Five Rings"– and then defining the Desired Effects" (Warden, Russell 48).

Campaign to Win –

Campaign to Win is, "about aggressively executing your system strategy. This is the phase of Prometheus in which you commission parallel campaigns and organize for success" (Warden, Russell 48).

Finish with Finesse –

Finish with Finesse is, "about an often overlooked aspect of strategy– preparing for the inevitable ending of products, processes, and businesses. To remain a perennial winner, you must plan the endgame in advance" (Warden, Russell 48).

The Prometheus Process, though specifically designed for the business world, carries potential application to the intelligence community and suggests possible solutions to the current woes plaguing America's intelligence agencies.

Prometheus Process Related to the Intelligence Community

As a systematic method of how to think, the Prometheus Process helps organizations determine a desired future and how to accomplish that future (Warden, Russell 6). Applying these principles to the intelligence community offers potential solutions to the shortcomings of the various agencies. Though an exhaustive relating of the Prometheus Process and the intelligence community is far beyond the scope of this paper, a few select instances validate the assumption that Col. Warden's brainchild is applicable.

Design the Future

One of the elements discussed by Col. Warden under Design the Future is the "tool" of Open Planning (Warden, Russell 71). Describing the weakness of a system that does not employ the Open Planning principle, Winning in Fast Time says, "Most of us have grown up in organizational environments where only certain selected people take part in important discussions. The results of these meetings rarely get translated in enough detail and with enough nuance to allow those who didn't participate to understand the thinking well enough" (Warden, Russell 72). The result is uninformed individuals unable to make "smart decisions on their own" (Warden, Russell 72). The principle of Open Planning involves meetings with more than just senior management discussing issues on the "strategic level" and not the "tactical" (Warden, Russell 72, 73).

Related to the intelligence community, Open Planning at first glance seems impossible because of the high security associated with intelligence operations and information disseminated on a "need to know" basis. Yet, specifically in relation to potential reorganization or suggestions to improve interaction on a day-to-day basis between various elements of the intelligence community, Open Planning provides a medium for brainstorming that gives a

voice to junior members whose opinions may not always reach to the top. As the foot soldiers of any organization, junior level workers understand the intricacies of day-to-day operations in the context of modern reality at a level senior management may not interact with. While including the average case officer, special agent, or office analyst in the process to fix the organizational shortcomings of the intelligence community, senior management benefits from a reality check that a rank exclusive process might miss.

Target for Success

One of Col. Warden's most prominent management tools is the Five Rings Model. The model identifies five "components" common to any "system" that "…contain one or more Centers of Gravity that will have a significant impact on the entire system if they are altered in any way" (Warden, Russell 112, 113). The model includes Leadership, Processes, Infrastructure, Population, and Agents components (Warden, Russell 112).

For the intelligence community, the Five Rings model provides an integrated approach to dealing with problems that helps resolve the issue of fragmentation identified by Russ Travers in the previously quoted statement from "The Coming Intelligence Failure." Each contributing agency of the intelligence community approaching problems through the common basis of the Five Rings model would constitute a significant step toward dealing with the existing decentralization of problem solving and endemic fragmentation. If the community were to organize with a common framework to approaching intelligence issues, cross-talk between organizations would become smoother and more productive.

Despite the advantages of the Five Rings model, two precautions to instituting a common community-wide approach in the intelligence world are necessary to address. First, a common approach could create groupthink (groupthink is the tendency to view a situation without constructive discussion, suppressing alternative explanations to the accepted answer) amongst the various agencies. In the case of intelligence professionals advising the President on issues of international concern, groupthink is dangerous at best and deadly at worst. Secondly, a common approach to the intelligence mission throughout U.S. agencies might increase the vulnerability of assets to effective counterintelligence. As a result, any adoption of the Five Rings model as a common framework throughout the intelligence world must couple with increased protection against hostile counterintelligence efforts.

Campaign to Win

Part of the Prometheus Process' discussion of campaigning to win is "Organizing for Success" (Warden, Russell 152). Warden and Russell state that, "Organizational structure is important because it shapes individual behaviors and causes certain patterns of events to reoccur" (Warden, Russell 153). The structure of a corporation or entity plays a significant role in determining the success or failure of an organization's mission (Warden, Russell 153).

Alluded to previously in this discussion, the current structure of the intelligence community bears partial responsibility for failures associated with Sept. 11th. Eleanor Hill, Staff Director of the Joint Inquiry Staff, states in her "Joint Inquiry Staff Statement, Part 1" of September 18, 2002:

> For example, officials at the NSA whom we have interviewed were aware of DCI Tenet's December 1998 declaration that the Intelligence Community was "at war" with Bin Ladin. On the other hand, relatively few of the FBI agents interviewed by the Joint Inquiry Staff seem to have been aware of DCI Tenet's declaration. (Aftergood)

A disconnect between the FBI and CIA, one which is to some extent structurally implicit, helped to prevent a completely coordinated approach to dealing with Osama Bin Ladin.

According to the Prometheus Process, organizational structure is critical to guaranteeing organizational success. In the case of the intelligence community, organizational restructuring could proceed in a variety ways. Though a detailed discussion of restructuring is a topic for further research, options might include creating a Director of National Intelligence. This suggestion was previously offered in the Borden-Mcurdy legislation in the 1990's (Commission on the Roles).

Finish with Finesse

"Finishing with Finesse" is one area in which the Prometheus Process has less to offer the intelligence community. The intelligence mission is never finished. As long as the United States continues to exist as a sovereign nation, the need for accurate, timely intelligence will remain. The "endgame" is nonexistent in the intelligence community.

Though "Finish with Finesse" is not applicable to the general intelligence mission, the principle does bear some applicability to individual intelligence operations. America cannot remain inevitably involved in all areas of the globe. Currently the U.S. continues long term operations in the Sinai, Korea, Bosnia, and the Middle East that hold little promise for resolution. The intelligence community must effectively manage limited resources to prevent entanglement in long-term commitments, focusing instead on issues of immediate concern.

Conclusion

The Prometheus Process is a tool of management and strategy specifically designed for the business world. Yet, the principles outlined by Col. John Warden and Mr. Leland Russell offer suggestions on how to solve the current shortcomings of America's intelligence community. Effectively linking the practice with the community will help to ensure that Sept. 11th is truly an event of history and continue the transformation of U.S. intelligence agencies into a potent force for a new era.

Bibliography

Aftergood, Steve. "Joint Inquiry Staff Statement, Part I: Eleanor Hill, Staff Director, Joint Inquiry Staff: September 18, 2002" FAS Intelligence Resource Program: 2002 Congressional Hearings. 17 Oct. 2002. Federation of American Scientists. <http://www.fas.org/irp/congress/2002_hr/091802hill.html>

Aftergood, Steve. "Counterterrorism Intelligence Capabilities and Performance Prior to 9-11: A Report to the Speaker of the House of Representatives and the Minority Leader" FAS Intelligence Resource Program: 2002 Congressional Reports. 15 Nov. 2002. Federation of American Scientists.<http://www.fas.org/irp/congress/2002_rpt/hpsci_ths0702.html>

Warden, John A. and Leland A. Russell. Winning In Fast Time. Montgomery: Venturist Publishing: 2002.

Factbook on Intelligence: The Intelligence Community. 10 Sept. 02. Central Intelligence Agency. < http://www.odci.gov/cia/publications/facttell/index.html>

Factbook on Intelligence: The DCI and his Principal Deputies. 10Sept02. Central Intelligence Agency.<http://www.odci.gov/cia/publications/facttell/index.html>

Shulsky, Abram, and Gary J. Schmitt. Silent Warfare: Understanding the World of Intelligence. 3ed. Washington D.C: Brassey's, 2002.

Travers, Russ. "The Coming Intelligence Failure." Studies in Intelligence: A collection of articles on the theoretical, doctrinal, operational, and historical aspects of intelligence. 1. (1997) < http://www.cia.gov/csi/studies/97unclass/index.html>

United States. Commission on the Roles and Capabilities of the United States Intelligence Community. "The Evolution of the U.S. Intelligence Community-An Historical Overview." Preparing for the 21st Century: An Appraisal of U.S. Intelligence. GPO, 1996. < http://www.access.gpo.gov/su_docs/dpos/epubs/int/int022.html>

- Note: The date of access is not included for URL sites
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(Endnotes)

[1] The acronym is not spelled out in the original quote

"The conventional army loses if it does not win. The guerilla wins if he does not lose."

Henry Kissinger

Calling the Audible

by C2C Adam J. Kawatski

The present world situation is different from the one the United States faced in years past. With the Soviet Union no longer a direct threat to the nation, the United States is recently finding itself involved in limited, conventional conflicts. However, the number of nuclear capable countries and the possibility of a nuclear terrorist attack are increasing. How does this affect America's nuclear employment stance? America is working to answer this question. The United States is adapting its nuclear doctrine to the changing world climate in order to maximize benefits of nuclear capability.

Now that the Cold War is over, Russia has become a different kind of threat. There is no longer the nuclear standoff between two superpowers. The weapons are still in Russia, but the political and military organization is but a fraction of the previous Bear's. In a Senate testimony, Dr. Loren Thompson, a leader in the nuclear research field, states that the United States is more concerned about Russian nuclear accidents or theft than they are about deliberate aggression (2).

Along with the unpredictable Russian threat are the new threats from rising nations that wish to reduce the United States' power in the world. Stephen J. Cimbala and James Scouras write in A New Nuclear Century, "The United States, now left alone as the world's sole military superpower, finds that nuclear weapons are the great equalizer of the weak against the strong" (154). This statement voices the fact that some of these nations may seek reduction of the United States' power through the use of nuclear weapons. Other weapons of mass destruction cannot be discounted. "[There are] half a dozen rogue states," describes Dr. Thompson, "with programs

to develop weapons of mass destruction, and terrorist movements [. . .]" (2). The deterrence theory of the Cold War may not work with these new threats. "Deterrence theory a la the Cold War, based on realist premises that assume risk averse and cost-benefit sensitive leaders, may no longer hold tenable for leaders armed with weapons of mass destruction and motivated by 'irrational' or 'illogical' objectives [. . .]," Cimbala and Scouras write of the shift in enemy paradigm (145). They echo, "[former] Secretary of Defense William Perry's comment that future terrorists or rogue regimes 'may not buy into our deterrence theory. Indeed they may be madder than MAD [Mutual Assured Destruction]'" (Cimbala and Scouras 145). It is to these new nation threats as well as terrorist organizations that the United States must adapt its nuclear doctrine.

The United States is beginning this adaptation to maximize the benefits of nuclear capability. "The United States cannot afford to ignore its nuclear doctrine, allowing it to sit on the shelf until another threat arises;" states the Air Force Doctrine Document 2-1.5, Nuclear Operations, "doctrine must be 'living' if it is to be effective" (v). Recently, the Bush administration released a plan called the Nuclear Posture Review that calls for the change in doctrine. In Dr. Thompson's Senate testimony she relays the review as an "effort to modernize the nation's nuclear strategy and forces so that they remain effective in a radically transformational global security environment" (2). Dr. Thompson adds that the goal of the change is to "reduce reliance on deterrence by acquiring offensive and defensive capabilities for coping with accident-prone or irrational adversaries," explaining the shift from Cold War deterrence (4).

In order to meet these new offensive and defensive requirements, the Nuclear Posture Review lays down a "New Triad" "of capabilities that would combine nuclear and conventional offensive forces, missile defenses, and a revamped nuclear weapons infrastructure" ("U.S. Nuclear Forces, 2002" 70). The New Triad also sets out a new system of nuclear warhead management. The main feature is the reduction in numbers of operationally deployed warheads from the present ten-thousand plus to three thousand, eight-hundred in 2007, and to between one thousand, seven hundred and two thousand, two hundred by 2012 ("U.S. Nuclear Forces, 2002" 70-71). The warheads taken out of operation will, however, be stored in a "responsive capability" in which they could be ready for operational deployment in several weeks if the need arises (Klare 6). Another feature of the New Triad involves the replacement of operational nuclear weapons with "powerful and accurate conventional weapons" (Krieger 1). The missile defense is another leg of the New Triad. David Krieger in his article on the Nuclear Posture Review describes the purpose of the missile defense stating "[The] missile defenses will be deployed ostensibly to protect the United States from attack by a rogue state or terrorist" (1). In addition, the Nuclear Posture Review calls for the upgrading of existing nuclear infrastructure systems to include platforms, communications, targeting and control.

Part of the restructuring of the nuclear infrastructure includes the upgrading of the bomber leg of the old Triad. Most bomber capabilities will remain unchanged. Both the B-52H and the B-2 bombers will be kept on high alert, and the F-117 will be kept on low alert ("U.S. Nuclear Forces, 2002 72-73). The Nuclear Posture Review does not call for a decrease in the number of non-strategic nuclear weapons. This means that the F-16 and F-15E, and soon the future Joint Strike Fighter, will continue a mission capability of delivering tactical nuclear weapons ("U.S. Nuclear Forces 72-73). A major change is in store for the B-1B bomber. "[Until recently] the air force has maintained [the B-1B] in a 'nuclear rerole' status. This meant that if necessary, the bombers could return to nuclear missions within months," explains the article, "U.S. Nuclear Forces, 2002","Under the new NPR [Nuclear Posture Review], the remaining ninety-two B-1Bs will be removed from 'rerole' status" (72). In addition, the B-1B is set to be eliminated from the inventory (Thompson 3).

The Nuclear Posture Review will affect the missile leg of the old Triad as well. The offensive force of ICBMS will face several changes in this adaptation. The review calls for a five and a half billion dollar plan to "improve the [Minuteman III's] accuracy and reliability and extend its service life past 2020" ("U.S. Nuclear Forces, 2002" 71). Another change in posture is that operational missiles will soon each carry a single warhead instead of the three to five that were payloaded during Cold War alert ("U.S. Nuclear Forces, 2002" 71). Also, the fifty MX missiles in the inventory will be eliminated, leaving five hundred Minuteman III's on alert (Thompson 4). The United States is, however, planning for a new ICBM to be ready in 2018. According to the article "U.S. Nuclear Forces, 2002," "The Pentagon says it needs new ICBMs with extended range and the ability to hit mobile, hardened, and deeply buried targets." (71)

The other change to the old Triad's missile leg is the development of a missile defense system. The "missile defenses can have a 'dissuasive effect' on potential enemies" by making it more difficult for a country to war with the United States ("U.S. Nuclear Forces, 2002" 74). The missile defense leg will consist of two to three airborne lasers for short-range interception of ballistic missiles, a mid-range interceptor made

up of ballistic missiles launched from submarines, and an undescribed, long-range interception system based in Alaska ("U.S. Nuclear Forces, 2002" 74). These new missile systems will be used to defend the United States from ballistic missile attack.

The New Triad also encapsulates a crossover from nuclear to conventional weapons. Michael Klare writes in his article "A New Pentagon 'Triad'"," [the] Nuclear Posture review is 'presaging a diminished US reliance on nuclear weapons in favor of 'conventional' munitions'" (qtd. in 6). The reason the United States seeks to transition to conventional is because new technological advancements have made today's conventional weapons more lethal, precise, and highly accurate (Krieger 2, Leopold 10). They incorporate precision guidance from satellite and other advanced information systems (Leopold 10). These new conventional weapons along with the advanced technology will be used to "hit hardened and deeply buried targets" (Leopold 10). For example the United States is developing systems like "a satellite-guided glide-bomb that could penetrate sixty feet of extremely hardened material" a task previously assigned to more capable nuclear weapons (Thompson 3). This paradigm shift in thinking follows the "belief that conventional weapons now have the capability to replace nuclear weapons in deterring an enemy from attacking" and the belief that future targets will consist of hardened bunkers or facilities deep in the earth (Krieger 2).

The New Triad calls for a "revamped nuclear weapons infrastructure" also ("U.S. Nuclear Forces, 2002" 70). The United States plans to put into operation in 2006 and 2008 new satellites that are "nuclear-survivable (e.g. against high-altitude electromagnetic pulse), anti-jam, low and medium data rate communications to strategic and tactical users" ("U.S. Nuclear Forces, 2002" 75). These new satellites will augment the MILSTAR system, which is scheduled to take over all nuclear communications in 2003 ("U.S. Nuclear Forces, 2002" 75). This communications capability will be part of new "secure, wide-band communications between national decision makers, command centers and operational forces," adds Dr. Thompson on this issue in her Senate testimony (10). The nuclear infrastructure improvements also involve consolidating the nuclear command and control capacity. This concept entails, for example, transitioning from EC-135s and E-6Bs acting as nuclear command and control platforms to just the E-6Bs ("U.S. Nuclear Forces, 2002" 75).

The United States is seeking to maximize the benefits of nuclear capability. The new system will offer the United States greater options for dealing with unperceived events. The Pentagon phrases this idea of the new system as "offer[ing] a portfolio of capabilities and the flexibility to address a spectrum of contingencies" (qtd. in Klare 6). This flexibility is rooted in the ability to have nuclear weapons in storage that could restore maximum nuclear capability if necessary as well as a wide array of highly-advanced conventional forces. Targets are evolving into deeply buried, hardened facilities, some of which may contain command-and-control functions and weapons of mass destruction ("Defense: A Better Posture" 1). The new system provides both the weapons and the information and communications that will complement each other in the destruction of these new targets (U.S. Nuclear Forces, 2002" 75).

The United States seeks to counter the proliferation of weapons of mass destruction. "[The] fundamental purpose of America's nuclear arsenal is to deter an enemy's use of weapons of mass destruction," states Air Force Doctrine Document 2-1.5, Nuclear Operations (1). Now, the new system incorporates the capabilities to deter "an enemy", who may be irrational, by the use of conventional means too. Indeed the new capabilities may allow the United States the ability to preempt an enemy's use of weapons of mass destruction ("Bush goes nuclear" 3, "Defense: A Better Posture" 1).

The United States is the most powerful country in the world. It attained this standing through military prowess, specifically nuclear capability. Air Force Doctrine states that the goal behind using nuclear weapons is to achieve U.S. political objectives and resolve a conflict on terms favorable to the United States (United States 12). These changes in the nuclear doctrine seek to maximize the benefits of being nuclear capable. "The principle aim of the Administration's nuclear policy," Michael Klare, author of "A New Pentagon 'Triad'" explains, "is [. . .] to firmly instill nuclear weapons in a new U.S. Strategy designed to insure permanent US military supremacy" (6). In this new era, the Soviet style deterrence may not work against rogue nations or nations with irrational leaders. Therefore, the reorganization, which involves a new offense capability made up of both nuclear and conventional weapons, a defense against missiles, and an upgrade to the infrastructure, gives the United States an ability to achieve total deterrence and freedom to act (Klare 7). Michael Klare again expresses the United States' goal writing, "[The United States has a] new grand strategy in which nuclear weapons will be wedded to missile defense and high-tech conventional arms to perpetuate America's 'sole superpower' status" (6).

The United States is adapting its nuclear doctrine to the changing world climate in order to maximize benefits of nuclear capability. With the changing world, a change in nuclear doctrine is

necessary. The Nuclear Posture Review addresses this need for change calling for a reorganization of the nuclear doctrine and capabilities of the United States. The adaptations include offense made up of both conventional and nuclear weapons, defense made up of a missile defense system, and an upgraded nuclear infrastructure. These adaptations of developing more flexible response systems and enabling the countering of those with weapons of mass destruction through a new type of deterrence and active preemption, allow the United States to maximize the benefits of nuclear capability and the right to stand alone as the superpower in the world.

Works Cited

"Bush Goes Nuclear." The Nation 1 Apr. 2002: 3.

Cimbala, Stephen J. and James Scouras. A New Nuclear Century. Wesport, CT: Praeger, 2002.

"Defense: A Better Posture." National Review 8 Apr. 2002: 1.

Klare, Michael T. "A New Pentagon 'Triad'." The Nation 18 Feb. 2002: 6-7.

Krieger, David. "Putting disarmament on the shelf." Humanist Mar./Apr. 2002: 1-2.

Leopold, George. "Nuke Strategy Eyes New Tech." Electronic Engineering Times 14 Jan. 2002: 10.

Thompson, Loren B. "Nuclear Posture Review." FDCH Congressional Testimony. 16 May 2002.

"U.S. Nuclear Forces, 2002." Bulletin of the Atomic Scientists May/Jun. 2002: 70.

United States. USAF. Nuclear Operations. AFDD 2-1.5. 15 July 1998.

Neocortical Warfare: A Future Revolution in Military Affairs

C1C Barbara Soucy

Throughout history, warfare has been the violent subjugation of an opponent's will on the field of battle, an art that has been honed to such a point that military power today is global in projection and almost instantaneous in application. What if it were possible to change battlefields, to truly fight the will of an enemy in the arena of the mind and achieve victory without violence according to Sun Tzu's "acme of skill?" At the moment, this is the fantasy of psychological operations with the creation of neocortical warfare: the melding of advanced physics modeling, upcoming nanotechnology, and reverse psychology to move beyond reacting to an opposing will and instead guide it in a desired direction.

Neocortical warfare has its scientific roots in advanced physics modeling, an intricate combination of statistical analysis and simulation that is growing in its application. Especially visible in highly volatile systems like stock markets or areas of high-density profit exchanges, simplified neocortical warfare has been a business tool that has grown in precision and popularity for the past several years. Today, stock brokerages enlist the aid of physicists in the development of investment plans, employing them as predictors of the stock market. Analyzing a company and its closest competitors, these physicists are supported by staffs that procure all available data on the situations, competitions, and trades surrounding a stock. With this data, a physicist creates a model that incorporates initial conditions and probabilities and then predicts an output using comprehensive rate equations. These models are required to be so precise that they can predict the fluctuation in percentage points in the stock environment by considering the state of the market at opening time. These models are, even now, capable of taking into account the effects of not only the stock mob, but also individuals and their actions as they pertain to the growth or failure of a stock on a daily basis.

Early applications of neocortical warfare in the military environment can also be seen. Simplistic models have been used to evaluate past battles in order to gain experience and an understanding of warfare that, at the moment, is limited to a Jominian view of warfare. As such, these elementary models consider only quantifiable data and disregard principles of war such as maneuver or surprise. What follows is a description of a combat simulation done by students in advanced physics classes at the United States Air Force Academy. The results show the rudimentary aspects of neocortical warfare in that, if applied to a similar situation in the future, they could make a specific prediction of outcomes based on analytical modeling.

The battle recreated was that of Iwo Jima in 1944, a classic conflict of attrition that the Japanese did not plan to survive as they fought from entrenched positions in tunnels against the invading American forces. There was little strategy involved as men and machines were sent against their opponents in waves, finally ending in American victory. This model took into account the initial conditions of forces and evaluated combat effectiveness, lethality, and survivability of units on each side. Once variables like damage capability, attack rate, accuracy, and survivability were able to generate results consistent with historical records, they were then applied to the analysis of the battle. The units were allowed to interact by way of statistical modeling, and the final results matched the air and ground phases of Iwo Jima.

The United States began with

Variables	US marines	US flamethrowers	US AVS	US Planes	Entrenched Japanese	Japanese Planes
Survivability	10	10	20	15	10	15
Armor	6	4	9	4	18	4
Damage inflicted	1.25	3	3.5	.7	1	.8
Attack Rate	1.5	1	1	1	1	1
Accuracy of Attack	1	3	4	.8	1	.7

Table 1: Graph of variables associated with each combat unit in the combat simulation for Iwo Jima.

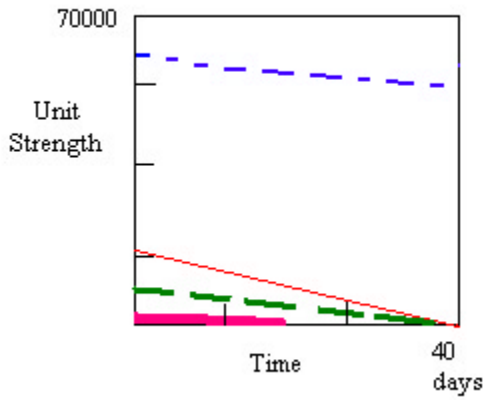

Figure 1

69,000 Marines armed with standard munitions and flame-throwers, along with armored vehicles and bombers to aid in the assault. Already entrenched on the island in tunnels or committed to aerial defense were 21,000 Japanese soldiers. The tables above show their respective capabilities in several areas as studied by the cadets.

Combined by relatively simple rate equations that compare each unit's effectiveness when in combat against each other, the model was able to accurately depict outcomes of the battle. In the initial stage, the entire island was bombarded by US bombers who were attacked only by inferior Japanese fighters as the Japanese marines tried to remain entrenched and under cover during this time. The result was a dramatic decrease in the number of combat capable Japanese fighters, a slight decline in US bombers, and little effect on the entrenched Japanese marines.

The second phase of the battle involved the land invasion in which only the ground units of each side participated. The historical results are accurately reflected by the model as the United States lost nearly 7000 soldiers but the Japanese were almost totally wiped out.

Figure 1: This graph depicts the rates of decline for each unit. The US marines are the thin dashed line at top, US flamethrowers are the thick dashed line, the US armored vehicles are barely seen at the bottom left corner of the graph due to their relatively small numbers, while the Japanese marines are the swiftly declining thin solid line.

Capable of accurately modeling the battle of attrition, this overly simplified model shows how combat simulations could be used as elementary versions of neocortical warfare in order to quantify future events.

Moving beyond these limited models of physics and allowing the military to see through the eyes of the enemy, nanotechnology would be the technological framework of neocortical warfare. For the information arena of war, researchers would be capable of creating a net of tiny computers, linked as a sensor array and able to span the globe. Initially the size of a dime and progressively shrinking as the technology is refined, such sensors would consist of a miniscule power source, either solar or chemically driven, a limited detection capability, and a tiny transmitter to relay information. The power source would be the restrictive variable for size and range. However, should a subatomic energy source be harnessed for nanotechnology, the possibilities as far as scale and projection of such sensors would be limitless. A minimal detection capability would be necessary not only to maintain initial size restraints but also to limit cost. It would be far less expensive to create a million dime-sized sensors capable of detecting one or two inputs than a thousand sensors capable of detecting a dozen inputs (Libicki, "Mesh and Net" 31). In any case, considering the scale of the sensors on which this informational net is based, the inputs noted by each sensor need not be alike. For example, one sensor could activate at a hormone present in human sweat, another at the fumes of petroleum, others at certain biological agents. If millions of these are created in small size and dispersed across a theatre, there would be little need for multiple functions in each apparatus. Their size would grant them the capacity to overlap, lying side by side and yet activating and generating signals when different stimuli are detected (Soucy). Provided that the size of these sensors eventually dwindles below the percep-

tion of the human eye, the result would be a network of information capable of being generated and sustained by technology that is indistinguishable from the very dust.

Such a net of sensors would necessitate a transition from the current form of platform-based warfare, such as tanks, logistics vehicles, and nonstealth air systems. A net with the capability of disguising itself and capable of detecting any programmable input, from fuel to proteins, would make such platforms obsolete, too easily detectable and, as such, too easily destroyed. The initial shift would be to a form of pop-up warfare, where assets are hidden as much as possible and used only when necessary (Libicki "Small and Many" 194). Any use at an inappropriate time would lead to the immediate destruction and loss of such assets. With nanotechnology, never again would an opponent be blind to developments such as the left hook of Operation Desert Storm. The shift in warfare would involve a form of blitzkrieg that emphasizes overcoming the sensor array long enough to use assets effectively and allow them to disappear. What, however, will happen when stealth capability is no longer able to fool sensors? For example, if a way were ever devised to detect gravity waves, any weapon, personnel, or asset with mass could be detected. A new strategy must step beyond such constraints out of the physical realm; the next battlefield would be the mind.

Building on physics modeling and the influx of information created by nanotechnology, neocortical warfare may be able to incorporate the psychological operations that directly attack the will of the enemy. With a nearly ubiquitous intelligence network, it may be possible to know the enemy so well that the perceptions and actions of an opponent can not only be predicted but redirected in a beneficial manner. How can an enemy be led to a desired end? By intimately know his actions and subtly changing what he believes to be inviolable—his perception of the global situation—one can lead an enemy into situations where the only rational outcome is the one desired. An embodiment of right-brain activity, neocortical warfare would emphasize shaping the behavior of an opponent, moving well beyond the limitations of physical violence (Szafranski 403). An ethereal way of fighting, it strives to use the prejudices, thoughts, emotions, and predilections of an opponent against him.

An example of neocortical warfare on a smaller scale that is used today goes under the criminal profiling technique of reverse psychology. An agent on the case of a known suspect may be able to take the facts available on a string of crimes, use background knowledge of the person, and attempt to become the suspect in some fashion. In doing so, the agent must adopt the customs, mannerisms, habits, and desires of the perpetrator in order to discover and predict possible future actions that cannot be seen with limited information or within the present biases.

Neocortical warfare is like the reverse psychology of today, but on a grand scale. Stepping outside of the ethnocentricities inherent in every society, it is a way of knowing enough that one can become the opponent, complete with the biases and customs of its respective culture. Neocortical warfare may even be applied to opposing commanders, truly bringing battle to the arena of the mind and playing on the thoughts, fears, and concerns of commanders of an opposing force by uniquely tailoring threats and psychological attacks to the weaknesses of each.

By immersing oneself in the these elements in order to mirror the psyche of an opponent and understand his possible future courses of action, one can use this knowledge to guide enemy actions to the most beneficial or least destructive alternative. In this manner, neocortical warfare might be a first step into a new warfare of the mind. The intelligence provided by microscopic sensors could be used to create comprehensive analytical models. Incorporating these into psychological operations, a military could then create situations for an opponent, guiding him away from victory through is own choices.

Bibliography

1. Libicki, Martin C. "The Small and the Many." *In Athena's Camp*. Eds. John Arquilla and David Ronfeldt. Santa Monica: RAND, 1997. p. 191-216.
2. Sun Tzu. *The Art of War*. Trans. Samuel B. Griffith. London: Oxford University Press, 1963.
3. Howard, Michael. *Clausewitz*. Oxford: University Press, 1983.
4. Szafranski, Richard. "Neocortical Warfare? The Acme of Skill." *In Athena's Camp*. Eds. John Arquilla and David Ronfeldt. Santa Monica: RAND, 1997. p. 395-416.
5. Toffler, Alvin and Heidi Toffler. *War and Anti-War*. New York: Warner Books, Inc., 1993.
6. United States Air Force Scientific Advisory Board. Report on Sensor Technology for Difficult Targets. Vol. 1: Summary; SAB-TR-01-01; June 2001.
7. Lowell, John J., Major, USAF, DFP, USAFA. Interview. Member of Scientific Advisory Board, 2001.
8. Soucy, Robert R., Lt Col, Ret, USAF. Interview.
9. Libicki, Martin C. *The Mesh and the Net*. Washington, DC: National Defense University, 1994.

The State of Airlift

by Beacher R. Webb III

The United States possesses the most powerful and technologically advanced military in the world. However, its dominating potential is useless unless it can be brought to bear effectively at the decisive time and place. The need for sufficient and capable mobility assets arises from this principle. Especially now, with the shifting world environment and changing role of the U.S. military, the need for global mobility has become even more pronounced. Specifically, the airlift component of global mobility is crucial to the effectiveness of military forces in modern warfighting. In his 1992 report, Keeping MAC Airborne, Major J E. Page of the U.S. Marine Corps noted that in the post Cold War world, "Airlift will be the only mode of transporation (sic) which can quickly and effectively impose sufficient forces to prevent a situation from developing to such magnitude that it becomes too costly in lives and equipment for U.S. intervention" (Keeping 5-6). But are the current airlift capabilities of the United States Armed Forces sufficient to meet modern and future requirements? After careful review of the facts, a shortfall in airlift capability is indeed present. The United States will need to bolster its airlift forces if it is to continue to meet and overcome the ever increasing need for airlift in the twenty-first century.

In examining the state of airlift and determining whether or not a shortfall exists, the first step is to assess the current capabilities of U.S. airlift forces. These capabilities are certainly not trivial. In Operations Desert Shield and Desert Storm alone, 111 C-5 Galaxies, 227 C-141 Star Lifters, and 117 commercial aircraft transported 500,000 passengers and 577,000 tons of supplies (Keeping 6). Major William L. Nichols of the U.S. Air Force records in his report, Strategic Mobility for the Future, that these aircraft flew over 15,000 strategic airlift sorties with 124 planes landing in the desert each day at the height of operations (Strategic 4). Meanwhile, C-130's provided airlift within the theatre of operations to over 209,000 people and 300,000 tons of cargo (Strategic 4). About.com's article, "Airpower in Operation Desert Storm," concludes, "Viewed in ton miles, the airlift of Operation Desert Shield/Storm was equivalent to repeating the Berlin Airlift -- a 56-week operation -- every six weeks."

Current airlift capabilities are largely determined by the characteristics of their force structure and organizations. An ever increasing majority of U.S. airlift assets fall under the Air Force's Air Mobility Command. Headquartered at Scott AFB, Illinois, Air Mobility Command employs 52,990 active duty, 9,240 civilian, 45,260 Air Force Reserve, and 35,420 Air National Guard personnel (About.com). The active duty component of Air Mobility Command consists of two numbered air forces and twelve air force bases (About.com). Seventy-one Air Reserve units of at least group level fall under Air Mobility Command when it is fully mobilized (About.com).

While the distribution of Air Mobility Command's assets among the Air National Guard and Air Force Reserve underscore the importance of non-active duty components to airlift, special emphasis should be placed on the role of commercial aircraft in bolstering U.S. airlift capabilities. Working with commercial airlines the government created the Civil Reserve Air Fleet (CRAF), so that in times of national emergency, commercial aircraft can be called upon to supplement military airlift. In his Global Security article, "Civil Reserve Air Fleet," John Pike, the director of GlobalSecurity.org, explains that commercial airlines participate in the CRAF program in exchange for the Department of Defense's peacetime business, a market that has increased in value by over a billion dollars in recent years (Civil 1). The Civil Reserve Air Fleet was employed for the first time in history in Operation Desert Shield, where it was responsible for twenty-eight percent of the cargo and two-thirds of the personnel airlifted into the theatre (About.com). When fully mobilized, CRAF nearly doubles U.S. airlift capability (About.com).

An analysis of the specific airframes used to conduct airlift provides further insight into U.S. airlift capabilities. The C-5 Galaxy, C-141 Star Lifter, and C-17 Globemaster III are the primary airframes responsible for strategic airlift. The Air University's U.S. Air Force Online Encyclopedia states that there are seventy C-5 Galaxies remaining in the Air Force inventory. These aircraft, costing 167.7 million dollars each, are extremely large and capable of carrying 291,000 pounds of cargo, including outsized, bulky army equipment, in its mammoth cargo compartment, which is thirteen feet high and nineteen feet wide (U.S.). The Air Force also possesses a total of 241 C-141 Star Lifters, which are economical aircraft costing only 8.1 million dollars each and capable of carrying 68,725 pounds of cargo (U.S.). The C-17 Globemaster III is the most recent addition to the U.S. airlift fleet, and its inventory is expected to reach 120 aircraft (U.S.). At a unit cost of 180 million dollars, these technologically advanced aircraft are capable of airlifting 170,900 pounds of cargo, including outsized equipment (About.com).

As impressive as the current capabilities of U.S. airlift are, the modern demands placed on it are staggering as well. In his thesis presented to the School of Advanced Airpower Studies, Bedding Down with C-O-T-S, Major Christopher J. Bence of the U.S. Air Force comments, "In any one week, AMC typically executes more than 2,000 missions in more than 40 countries" (3). The reality is that as the United States maintains and

increases its world-wide commitments while decreasing its permanent overseas basing, the U.S. military is becoming more and more dependent on airlift for both deployment and sustainment. Nichols agrees by asserting that the nation's military strategy in the post Cold War world has shifted to demand increased global military presence while centralizing into a predominantly CONUS based force (Strategic 3). The effect is shocking. Bence writes, "Airlift operations — whether responding for humanitarian assistance, natural disaster relief, or peace enforcement combat operations — have quadrupled within the last decade" (Bedding 50).

Increased commitments and a continental force are not the only factors increasing the burden on airlift forces. A combination of budget cuts and aging forces is also straining the capabilities of mobility assets. The average C-141 Star Lifter is now thirty-four years old (Strategic 5). While this aircraft was designed to fly for only 30,000 flight hours, the average C-141 Star Lifter exceeded 32,000 flight hours in 1993, which generates both safety and reliability concerns (Strategic 5). The United States Air Force had planned on these aircraft continuing in service until 2010 (Strategic 6). In the early 1990's, a total of 210 C-17 Globemaster III aircraft were ordered to supplement, not replace, the aging C-141 Starlifter in providing airlift, but Congress cut the funding for the program, reducing the number to be built to 120 (Keeping 8). These 120 aircraft are now being depended on as the replacements rather than the supplements to 241 C-141 Starlifters. Bence concludes that "the United States has continually reallocated or cut funding for national airlift assets, creating an unacceptable airlift shortfall that undermines US national security strategy" (Bedding 21).

In addition to larger demands and smaller budgets, a number of government studies prove that there is indeed a shortfall in airlift capabilities. The first of these studies was the Congressionally Mandated Mobility Study of 1981, which concluded that in wartime the United States would require the ability to airlift eighty-three million ton-miles-per-day (MTM/D), and at bare minimum, the U.S. should maintain a capacity of sixty-six MTM/D (Bedding 25). This baseline has never been met (Bedding 25). Another study, known as the Mobility Requirements Study, took place in 1992 to determine post Cold War airlift requirements (Bedding 25-26). This study reduced the baseline to a requirement of fifty-seven MTM/D, which also has never been met (Bedding 26). The most recent study conducted was the Mobility Requirements Study Bottom Up Review Update in 1995, which was modeled after a 2001 projected force structure (Bedding 26). Under fiscal pressures, the participants in this study resolved to lower the airlift baseline requirements further to 49.7 MTM/D (Bedding 26). Even with the reduced baseline, the shortfall remains, with the combined airlift capacity of both military and commercial airlift totaling only about 45 MTM/D (Bedding 27). In 1996, a study titled Airlift 2025: The First with the Most set out to determine projected airlift requirements for the year 2025 and concluded, "The current air mobility system will not support the air logistics requirements we are likely to face in 2025" (Airlift 4). The Chief of Staff of the Air Force at the time, General Ronald R. Fogleman, voiced his concerns to the participants of the study, "The single biggest deficiency in the Department of Defense is lift" (Airlift 4).

A number of possible solutions have been posed to remedy the shortfall in airlift capabilities, while not greatly increasing the airlift budget. One alternative is to rely more heavily on sealift. This idea seems appealing when one considers that ships can carry larger loads, and sealift was responsible for transporting ninety percent of all cargo moved in Operations Desert Shield and Desert Storm (Strategic 9). In fact, Nichols points out that "one dry cargo ship can carry the equivalent tonnage of approximately 2.5 days of airlift" (Strategic 9). However, the speed and flexibility of airlift remain essential to the military's rapid global mobility in today's world, a role that cannot be fulfilled by sealift. Bence offers an excellent example:

> During the 1973 Arab –Israeli War, the USAF flew more than 500 sorties supporting Israel. Within 48 hours of the decision to act, the first airlift sorties landed in Israel delivering critical supplies and equipment to America's ally. In contrast the first sea lift vessel to reach port —although carrying more tonnage than all the airlift sorties combined —arrived 20 days after hostilities erupted but 12 days after the cease-fire. (Bedding 3)

Another possible answer to the airlift shortfall is to rely more heavily on the Civil Reserve Air Fleet or even switch over completely to a contracted airlift. Major Dale L. Dekinder of the U.S. Air Force considers the plausibility of this option in his thesis, Express It: Privatization of Airlift, but finally rejects it, quoting LeMay, "The military has core airlift needs of crucial importance at the outset of emergencies that reliance for anything but a seasoned, properly equipped, disciplined military force is a folly....Where the security of the free world is suddenly threatened, we cannot wait for the acquisition of commercial airlift" (7). Also, there are many limitations on the military use of commercial aircraft, including the inability of such aircraft to transport outsized army equipment, the political ramifications of flying commercial aircraft into dangerous combat zones, and the fact that commercial aircraft are not capable of aerial refueling (Strategic 7).

A more plausible solution to the airlift shortfall is the direct bolstering of the airlift fleet by increasing the funding of airlift organizations and purchasing more aircraft. Such action must also include the gradual replacement of the aging fleet's current inventory. Specifically, both Nichols and Page agree that a greater number of C-17 Globemaster III aircraft would best improve overall capability. As a critical part of the modern national strategy and a prerequisite for the timely deployment and sustainment of forces in all military operations outside the United States, airlift must be given the priority, funding, and resources needed to be effective. This is not the part of the budget to compromise on.

After careful analysis, it is clear that the United States will need to bolster its airlift forces if it is to continue to meet and overcome the ever increasing need for airlift in the twenty-first century. Despite the incredible capabilities of the United States' airlift assets; there is still a shortfall due to ever increasing demands, the transition to a continental force, aging aircraft, and budget constraints. Now is the time for the United States to take action, bolster its airlift forces, and safeguard the effectiveness of the most dominant military in the world.

Works Cited

About.com. 28 Oct. 2002. About, Inc. 28 Oct. 2002 <http://usmilitary.about.com/library/ milinfo/affacts/blaffacts.htm>.

Airlift 2025: The First with the Most. Ed. James A. Fellows. 11 Dec. 1996. Air University. 28 Oct. 2002 <http://www.au.af.mil au/2025/volume2/chap04/v2c4-1.htm>.

Bedding Down with C-O-T-S. Ed. Christopher J. Bence. 4 March 2002. Air University. 28 Oct. 2002 <https://research.au.af.mil/js/papers/display_abstract.asp?guidelinks=759>.

"Civil Reserve Air Fleet." Global Security. Ed. John Pike. 8 Nov. 2001. 28 Oct. 2002 <http:// www.globalsecurity.org/military/ systems/aircraft/craf.htm>.

Express It: Privatization of Airlift. Ed. Dale L. DeKinder. 1992. Global Security. 28 Oct. 2002 < http://www.globalsecurity.org/military /library/report/1992/DDL.htm>.

Keeping MAC Airborne. Ed. J E. Page. 1992. Global Security. 28 Oct. 2002 <http://www.globalsecurity.org /military/library/report/1992/PJE.htm>.

Strategic Mobility for the Future. Ed. William L. Nichols. 1993. Global Security. 28 Oct. 2002 < http:// www.globalsecurity.org/ miitary/library/report/1993/NWL.htm>.

U.S. Air Force Online Encyclopedia. Air University. 28 Oct. 2002 <http://www.au.af.mil/au/ database/projects/ay1996/acsc/96-004/index.htm>.

"The old aphorism that amateurs talk about strategy while professionals talk about logistics was validated again in the Falklands. The outcome of the battle maybe seen to be a failure of Argentine logistics and a major success of British logistics."

John F. Lehman, Jr.

"Understand that the foundation of an army is the belly. It is necessary to procure nourishment for the soldier wherever you assemble him and wherever you wish to conduct him. This is the primary duty of a general."

Fredrick the Great

The Role of Air Power in Peacekeeping and Peacemaking

by C2C John Oberle

As technology advances, air forces are now able to fly higher, faster and more out of harm's way than before. Despite the recent resurgence of patriotism in the American people, there is still a risk-averse mentality that tolerates very few American casualties overseas. These factors make it tempting for policy makers to frequently use the military only in situations where there is very little chance of exposure to danger. This not only reduces the effective spectrum of military operations, it degrades the foundation upon which the military is based, that is, to devote one's life to the preservation of the Constitution and the values that it represents. The use of air power in a peacekeeping or peacemaking application must not be seen as a "cure-all" but rather as part of a joint force venture in which it serves to greatly enhance the effectiveness of peacekeeping forces. This paper will explore the use of air power in the Kosovo Campaign, relate the dangers of solely using air power, and how to employ air power in peacekeeping operations.

An excellent, recent application of air power in peacemaking operations would be NATO's air campaign over Kosovo in 1999. This example serves to highlight both the negative and positive aspects of using air power in peacemaking operations. Many proponents of a new kind of warfare which solely uses air forces point to the Kosovo campaign as an example of a turning point in warfare. They cite statistics such as the Supreme Allied Commander Europe, General Wesley Clark's, briefing to the press on the findings of NATO's Kosovo Mission Effectiveness Assessment Team. These statistics include 93 tanks, 153 armored personnel carriers, 339 military vehicles and 398 artillery pieces being destroyed or disabled by NATO air strikes (Could it Have Been Done Better?). They also cite the very appealing fact that in the air strikes, there were no NATO casualties. In addition, claimants point out the measures used to prevent civilian or collateral damage, such as precision guidance systems and timing. In the end, Milosevic was forced to surrender after 78 days of air strikes against his forces and submitted to the demands of NATO.

But in the end, what was the cost? Flying at high altitudes led to difficulty in acquiring targets. On 14 April 1999, a pilot mistook an Albanian refugee convoy for a military column, resulting in dozens of civilian casualties. While these kinds of incidents were few in number, they embarrassed NATO in the world political scene (Air Power Over Kosovo). The air campaign effectively forced Milosevic to capitulate, but its effectiveness in implementation left much to be desired. In reducing the capability of Serbian forces to accomplish ethnic cleansing, one of the goals of the air campaign, the air strikes proved to be only marginally effective. Most military assets remained unharmed due to targeting restrictions, concealment and deception. Air strikes provided political protection of the Albanians, but did not achieve physical protection of the Albanians, meaning that they could only serve as a punitive act against Serbs after they harmed the Albanians. This is a result of the fact that since ground troops were not deployed, NATO could not stop the acceleration of the ethnic cleansing while it was happening. Although the Serbs eventually were pacified, they succeeded in displacing 1.3 million Albanian Kosovars. While planners originally believed that Milosevic would give in to demands after two days of bombing, it took 78 days to achieve his surrender. The supposed lightning air campaign lasted far longer than any of the NATO planners predicted (Hinen).

So what exactly are the limitations of solely using air power in peacekeeping or peacemaking operations? First, limits exist regarding the effectiveness of operations when using only air power. Secondly, there are inherent dangers to the image of the United States. The limit in effectiveness can be readily seen in the Kosovo example, where the lack of ground troops led to extreme difficulty in protecting Albanians under attack. As a result, air power served only as a punitive action. This means that the application of air power in this case is limited to long-term strategic objectives rather than short-term tactical goals. Furthermore, a psychological cost must be paid in order to fly out of harm's way. While this cannot be measured directly in terms of dollars or manpower, it is manifested in America's image. By ensuring that there are no American casualties in exchange for some "acceptable" collateral damage and civilian fatalities, the actions of the military can be construed as promoting the negative idea that American lives are far more valuable than the lives of others. More radical supporters of this view suggest that point that civilian's lives are taken in order to avoid American casualties. While this may not be the intent of those making policy, the unintended cases of civilian casualties convince people otherwise and cost America politically.

So what are the ways in which air power should be applied? To answer this question, we must divide the applications into the categories of lethal and non-lethal application. However, in either of these cases, it is very important to make air power a joint venture, not a "magical bullet" which will solve

every situation's problems. In terms of lethal application, air power should be employed both in a strategic and tactical manner. Just as in Kosovo, air power should be used strategically to attack enemy centers of gravity such as infrastructure or the population's will to support a regime. This can reduce the enemy's will or capability to fight. Tactical applications include close air support of friendly forces or force protection of fielded personnel. In lethal applications, the use of air power will resemble the same tactics and strategy used to employ air power in any other war.

However, it is important not to overlook the non-lethal application of air power in peacekeeping operations. Firstly, air power can play a critical role in communications, which is an integral part of any successful operation. Through the use of satellites, communication within and between units is quicker and more reliable than ground based assets. Also, air-borne platforms can provide a needs-based augmentation of existing command, control and communications networks in a flexible and reliable manner (Cook).

Secondly, air power plays a large role in intelligence capabilities. The use of air power for observation is a large aspect of airborne intelligence support. Unhampered by the restraints of ground-based assets, air units can quickly provide large amounts of data to the analysts, whether it is through a satellite, an unmanned reconnaissance vehicle, or through patrolling aircraft. Imagery intelligence, signals intelligence, measures and signatures intelligence, and electronic intelligence can provide forces on the ground much needed tactical intelligence about the enemy's size, movement, and composition. In addition, it provides strategic targets and allows planners to know more of the enemy's activities than with just ground forces. Air power is also very important in distributing psychological operations material by air dropping them over the target, whether it is enemy soldiers or the enemy population (Bash).

Thirdly, air power plays an incredible role in peacekeeping operations in the field of mobility. Of all the non-lethal applications of air power, mobility is probably the largest of them all. Mobility is used in peacekeeping by global reach and power projection through the use of airlift and aerial refueling. This allows forces to deploy to austere locations around the world with little or no existing support infrastructure. This also provides stability throughout various regions of the world by ensuring that American presence and prestige is visibly observed by other countries. In addition to making enemies reluctant to act, it also encourages support of the United States from other countries. It does this by strengthening the bonds between America and countries that receive humanitarian aid, which relies heavily upon military logistical support. It also improves the image of the United States by allowing the rapid response needed to declare America's resolve to diffuse crises around the world. Finally, it promotes non-lethal means of intervention because it allows situations to be resolved before the need for military force arises. Examples of applications of air mobility in peacekeeping are the airlifting of food and medical supplies during Operation Provide Promise in Bosnia, a massive relief effort to people of the former Soviet Union in Tajikistan during Provide Hope, and the airlifting of 1,000 UN peacekeeping forces and their supplies in support of Operation Impressive Lift in Somalia, just to name a few examples (Hauck, 19-26).

In conclusion, the use of air power in peacekeeping operations is vital to many operational successes. However, it is important to understand that the use of air power can not win a war or resolve a conflict by itself. While it is possible to bomb an enemy into submission, as demonstrated by NATO's Kosovo campaign, such actions carry with it political and psychological implications onto the American national image, and may not always be replicated with great results. In other words, air power serves a strategic and tactical purpose in the application of peacekeeping by destroying enemy forces and targets, but also serves as an auxiliary to augment ground forces through communication, intelligence, and mobility and must be an integrated part of any force package for any peacekeeping operation.

Bibliography

Bash, LtCol Brooks L., USAF. "Air Power and Peacekeeping." Airpower Journal. (Spring 1995).

Cook, Major Gregory P., USAF. "Waging Peace: The Non-Lethal Application of Aerospace Power." Federation of American Scientists. 22 May 1995. 2 Oct 2002 @<http://www.fas.org/spp/eprint/cook.htm>.

"Could it have been done better?" Federation of American Scientists. 21 Mar 2000. 2 Oct 2002 <http://www.fas.org/man/dod-101/ops/2000/repo2000/better.htm>

Hauck, John D., USAF. "Non-Lethal Air Power—Air Mobility's Other Mission." Air War College Air University. 14 Apr 1995. 3 Oct 2002 <http://www.au.af.mil/au/ database/projects/ay1995/awc/hauckjd.pdf>.

Hinen, Col Anthony L., USAF. "Kosovo: 'The Limits of Air Power II'." Air & Space Power Chronicles. 16 May 2000. 2 Oct 2002 <http:/

/www.airpower.maxwell.af.mil/airchronicles /cc/hinen.html>.

International Institute of Strategic Studies. "Air Power Over Kosovo: A Historic Victory." Strategic Comments. 28 Sep 1999.

INFO OPS: the Need for Organization

by C2C Jamison Richart

The advent of Information Operations (IO) as an official military task has summoned the problem of how to best organize such a prospective group of people. As it currently stands those responsible for IO planning are attached to a diverse group of organizations and have no unified agenda, process, or organization. For IO to become truly successful standardized methods must be set down to ensure the expansion of IO methodology and organization. The shear amount of information and communication that Info Ops demand require that those involved in the task of IO be organized in such a way to maximize their available resources, speed, and flexibility while at the same time preserve security and the independence of the military services.

There are several problems existing in today's military that require the use of a strong IO program capable of supporting military objectives. The Wave Theory proposes 3 different levels of human civilizations, with the third being one with highly advanced highly trained armies. These armies are capable of striking not only with conventional weapons, but also with use of technology and information. The enemies of the modern, at least those of rational minds, no longer consider the United States conquerable by conventional means. Instead the terrorists and states of the world are beginning to attack the United States by non-traditional methods. They have elements of Third Wave Civilizations as they are not attacking en mass. Instead they are attacking in small groups using sophisticated techniques. As realized by several experiences during military and civil projects an enemy now exists that is not a recognizable army with guns, rather it is the small cell of dedicated professionals who are dedicated to damaging the United States through the use of information. [1] These groups are hard to track, can be found in great numbers, and consider the United States their primary target. This makes them a dedicated enemy with unpredictable methods and varied talents, this in turn makes them dangerous. A second type of enemy using Info Ops against the United States is the more traditional organized state. The United States is not popular amongst certain states of the world and these states are organizing to wage this new type of warfare against the United States. While reportedly not as advanced as the United States these states are developing the capability to attack the United States dealing with IO:

> China's military, faced with powerful and technically advanced U.S. combat forces, is exploring the use of computer viruses, information warfare and stock market manipulation as non-traditional "weapons" to offset America's huge military advantage. [2]

If left untended and unprepared for, these states could pose a serious threat to the security to the United States in the coming decades.

Both of these examples of enemy elements will be using different methods to attack the United States. The common thought is that Info Ops is a group of men at computers attempting sabotage against one another. While this "computer hacking" is to some degree true of one aspect, the world of Info Ops is more extensive. Info Ops covers the realms of advertising, public media, disinformation, stealing of information and several other possibilities in addition to the stereotyped computer world. Essentially, a program meant to use information to manipulate the enemy can be considered IO. This makes the possibilities for enemy attack numerous, and the capability for defense and possible counter-attack essential.

In order to have the capability to counter all these potential threats, the United States must organize its forces in such a way as to make its defense as flexible and powerful as possible. This paper will review three proposed methods for the basic structure of IO personal. The pros and cons of each structure will be addressed in terms of practical application, varied theories, and "the OODA construct" for the purpose of discovering the possibility of the best method for the overall structure of IO. While a specific chain of command with defined career criteria will not be expounded upon, the basic underlying structure will.

Method I, Leaving As Is.

> The idea of IO is not new. Since the beginning of organized warfare Info Ops have been waged in order to gain advantages over enemies. Sun Tzu himself expounded upon the use of Info Ops as a critical component of warfare that could gain ultimate victory:
> The Master Conqueror frustrated his enemy's plans and disrupted his alliances. He created cleavages between sovereign and minister, superiors and inferiors, commanders and subordinates. His spies and agents were active everywhere, gathering information, sowing dissension, and nurturing subversion. The enemy was isolated and demoralized; his will to

resist broken. Thus without battle his army was conquered. [3]

It should come then as no surprise that the United States military does conduct Info Ops on a regular basis. Most notable are the Psy Ops campaigns conducted successfully during numerous occasions. [4] Thus the United States has successfully conducted Info Ops for a great deal of its military history against traditional threats. However, the nature of the threat is changing and as such so does the organization of our defenses.

The standard methods at present for training technology based Info Ops personal are not standardized. [5] The theories existing about how to best handle the technology threat are too new and varied and the methods often times to complicated to have any standard methodology. [6] As such there is no specific job placement for those trained in the nature of Info Ops. Instead Info Ops has become a function of the more established fields within the military such as communications and intelligence. [7]

This practice has lead to a rather limited exposure to procedures dealing with Info Ops, and methods for combating the enemy are only recently receiving wide spread exposure quote. The issue is compounded by the lack of resources now dedicated to Info Ops. Being such a new area of warfare it has yet to gain the type of popular support needed for large-scale research and development. [8]

The obvious solution to these problems is of course standardized training, resource allocation, and increased R&D. This would enable more trained personal familiar with the craft in addition to better equipment and methods. This would increase the capability of the armed forces to handle many of the problems that they may face in the future. However, the system would still resemble the current one of random personal subservient to larger units. Problems exist with the process of personal being trained to do tasks that their unit does not do, no matter how well trained and equipped. Without a specialized career field for support the job of Info Ops will not receive the priority it needs in order to function at its utmost capability. [9] The primary mission of the host unit will take precedence and the individual missions of the Info Ops personal will receive secondary considerations. If we borrow a lesson from the OODA loop and look at the last portion of "Act" we can safely say that the current organization cannot effectively execute its decisions. [10]

The inability for those involved IO to execute their decisions is problem using this model to organize IO. Considering the already stated growing nature of the threat this is a dangerous proposition.

At its present state of existence IO personal, at least those assigned to the military, are organized in a pattern that does not resemble any functional organization. As explained by several theorists the United States military follows a rather haphazard method for preparing its forces to combat this new type of threat:

> A culture of change, flexibility and adaptability is more important to transforming the military than simply having new hardware, Defense Secretary Donald Rumsfeld told students… [11]

While the US military does manage to successfully combat the more traditional Info Ops such as Psy Ops, it is nevertheless struggling with the emerging technological threat. The solution of simply more training and resources is no an ideal solution, a more complete restructuring is needed.

Option II: The Independent Info Ops Group

The most famous information gathering and exploitation groups in history exist in the United States as independent organizations with the resources to carry out their specific tasks. The CIA and NSA both cater to the need of Info Ops and do so in a manner that is independent of any other organizations, and they are considered successful in what they do. It has been suggested that what the military needs is a new branch of service that would serve in a similar capacity as the CIA and NSA. [12]

Much as the Air Force grew out of the Army, it is now time for an Info Ops branch of service to develop from all the services to serve as their intelligence offensive and defensive capability, and in the process be independent of all of them.

The advantages from such an organization are readily recognizable. The most identifiable are that this option readily rids us of the problems that exist in the current system. This independent organization would have the soul purpose of training and equipping its personal for its primary mission, that of conduction the process of conducting modern Info Ops against the enemy and for the defense of the branches of the military against Info Ops directed against them. This resolves the apparent crises caused by shortage of manpower and acquisition of resources faced by the current branches of the military in handling this new field of expertise. Second to this is the additional advantage of having a centralized group of people with common training, end goals, and capabilities, that being that the mission is done comparatively better and more quickly then if a decentralized effort is made with non-standard training and improper resources. [13]

The greatest hazard to the idea

of a separate IO corps is the tendency for a large organization to become self-serving. This is the main standing complaint with existing organizations such as the CIA and NSA, that the information collected by these groups is not sent where it is needed in the military world due to concerns of security on behalf of these intelligence organizations:

> The bad news is that all of the hype could impede sensible policy analysis, cloud objective resource allocation decisions, and mask real technical and operational risks and vulnerabilities. In the scramble for turf and budget shares, clear thinking about the relative value of information, in all of its various dimensions and implications for the U.S. military, has too often been a casualty. That could lead to unfortunate structural changes in organizations, inadequate analysis of critical issues, and a failure to prioritize effectively in applying information technology to warfare and broader national security concerns. [14]

The phrase "need to know only" are often times a great hindrance to military operations as the organizations such as the CIA and NSA often determine what exactly "need to know" is, and their definition often comes into conflict with the military's definition. This tendency may well come into play with a brand new branch of service, that it may consider it's own interests before those of its sister branches it is supposed to be serving. As with the already existing branches of service a new Info Ops Branch may in time consider its own interests above those it is meant to work with. This conflicts with the ideal second step of the OODA loop. With the IO branch very capable of observing the a situation it will nevertheless become incapable of passing along the information. The end result being that the branch of service affected will be unable to properly orient itself to the new threat. This will result with parts of the military unable to correctly complete their own missions, as their capabilities for information would rely solely with this new branch of service. With the Navy, Army, and Air Force just beginning to understand the benefits and capabilities of joint operations it is difficult to imagine how complicated it would be to create a new branch of service without it causing much confusion and speculation in the foreseeable future.

Third Option: Specialized Career Field

The third and final option that will be discussed is the idea of a career field within the services that would deal specifically IO. This option compromises between the two before mentioned options and incorporates many of the positive aspects each have to offer. What this specific option proposes is that a new career field be created in a implanted in the services in a rather delicate balance between a supporting role and a main role.

The advantages of this option are that it does manage to take advantages from both the option to maintain the status quo and from creating a separate branch. From the first option we simply strengthen what already exists and capitalize on the experiences that have been gained thus far. The pool of talent and knowledge exists in the branches of service at present, it is simply not being coordinated properly nor properly used. If it is possible with this option to centralize the talents from the ranks of the military and gather the resources necessary to complete the varied missions of IO then this alone makes it viable. The strengths gathered from the second option, that of a separate branch, is that creating a new career field gives the practice of IO legitimacy with the structure necessary to enforce its views and practices:

> The current arrangement on the Joint Staff presents some unique challenges as no one is actually in charge. The J3 and J6 principals are too busy to dedicate the constant attention this area requires and day-to-day responsibility for IW on the Joint Staff is delegated. A need exists for direct flag officer sponsorship to orchestrate joint IW policy and doctrine development, conduct operational planning, and establish requirements. A dedicated flag officer sponsor would greatly facilitate coordination with Services, OSD, the Intelligence Community and as IW matures, the interagency and civilian sectors. It would also send a strong message that IW is an important joint war fighting issue requiring immediate high-level attention. [15]

A problem with IO as it exists today is that many of those in charge do not consider it a primary concern and concentrate a great deal of effort instead on the conventional modes of war, that of guns, missile, and armed troops. If the structure would exist that those that in charge would have to take into consideration IO then this option would serve its purpose.

The foreseeable problem with this option is one that deals with the role of IO in future campaigns. Traditionally the feeling has been that IO should exist as a supporting role in the military. IO and its many faces have been used to support the missions that are the primary purposes of the different services: Air, Land, and Sea Supremacy [16]. In its new position as separate career field it can still act in this capacity, as a source of power augmentation for the primary goals of the different services. However, as the danger of IO increases from outside sources then the importance of IO will increase as well. [17] In time it is possi-

ble that IO will become a separate battlefield in itself and its success will become primary mission as well. The separate services will need the talents that an IO can provide as a force enhancer, but IO will have to serve in the capacity as a primary role as well. [18] This dual purpose of both primary and support roles may lead to several complications of interest, not the least of which are resource allocation and command structure. The standing practice is that during times of crises the majority of the resources will go to those caring out the primary mission and not those serving in a support role. Potentially this will cause problems within the OODA loop for the ability to act. The first steps of Observe and Orient will be carried out well, however with the indecision caused by serving two purposes it will be difficult to decide how to best serve the best purpose. If the IO career field must potentially serve both purposes at the same time then how will it use its resources and share them with others in the military. This dilemma will in turn lead to problems in command, and who has jurisdiction in times of crises:

There is a twofold problem: determining how to increase the relative importance of information and information-related specialties in the overall scheme of things and how to integrate information effectively into military operations. The usual approach to upgrading career specialties in the military involves creating separate commands and organizations (e.g., "centers"). Unfortunately, there is a natural tension between this approach and the need to integrate information more effectively into the entire spectrum of operations. Creating separate organizations tends to isolate rather than integrate, confuse means and ends, and mix disparate functions in an inappropriate manner. [19]

Is it the IO commander who decides what information is needed to complete the mission and does not release anything else, or is it the battlefield commander who decides what he needs and IO must supply it? These factors must be worked out in order for IO to be successfully integrated as a separate career.

Conclusion: What is the Best Solution?

All three possibilities offer differing levels of pros and cons. What is needed is to decide what option is best for the military in the future; what are the priorities and which option is best suited for these priorities. In the future the threats will be coming from many different factions, using many different modes, and seeking many different goals. It is specifically the job of the military to track down such parties and ensure their defeat.

The United States military is being asked to conduct a new type of warfare that consists of defense and offense using information as the weapon available. It must now combat against any person or group of people with access to a computer or the media. This requires a system that incorporates the large amount of resources and training to battle necessary to combat this threat, has the inherit flexibility to adjust to the evolving threats, and have the ability to work with other groups within the military.

With this in mind the option of a new field within the armed forces is the preferred option of the three. While it does it have its potential drawbacks it nevertheless combines the assets needed to handle the potential IO threat. It entails the already existing capability of the military to produce trained personal with the resources and command structure inherent with a separate branch. While nothing exists like it today, and several problems must be resolved for it to be a viable option, it nevertheless represents the option with the most desirable end process. The ability to have a functional unit of IO operators who are attached and dedicated to a branch of the military is necessary for the future of IO. This arrangement will ideally have the power and flexibility to wage successful IO campaigns. A separate career within the military specifically dedicated to IO is what is needed to most satisfactorily handle the potential threats in the upcoming decades.

Works Cited

Alberts, D.S., The Unintended Consequences of Information Age Technologies, National Defense University, <www.ndu.edu/ndu/inss/books/uc/uchome.html> April 1996

Alberts, D.S., Defensive Information Warfare. NDU Press Book, National Defense University, August 1996.

Browning, G., Infowar.<www.GovExec.Com>, April 21, 1997.

Forno, Richard. The Art of Information Warfare. Uppublish. New York. 1999.

Fredericks, B., Information Warfare: The Organizational Dimension, Institute for National Strategic Studies, National Defense University <www.ndu.edu/inss/siws/ch4.html>, 1997

Glenn Buchan. Information War and the Air Force: Wave of the Future? Current Fad? <www.rand.org/publications/IP/IP149/> March 1996

Jim Garamone. Flexibility, Adaptability at Heart of Military Transformation.

American Forces Press Service. Fort Lesley. Jan. 31, 2002

Sun Tzu. The Art of War. Oxford University Press: London. 1968.

Miller, J.H., Information Warfare: Issues and Perspectives, Institute for National. Strategic Studies, National Defense University <www.ndu.edu/inss/siws/ch7.html> March 1995

Wood, David. China Explores Ways to Defeat Superior U.S. Forces In Fight 'Weapons' Include Computer Viruses, Market Manipulation" San Francisco Chronicle, Apr. 20, 2001

(Footnotes)

[1] Arquilla, John, David Ronfeldt. 's Camp, Preparing for Conflict in the Information Age. RAND: Santa Monica, Ca. 1997, 232

[2]Wood,David. 'Weapons' Include Computer Viruses, Market Manipulation". San Francisco Chronicle, Apr. 20, 2001, 54

[3] Sun Tzu, The Art of War. Oxford University Press. London, 1968, 54.

[4] Psychological Operations. Air Force Doctrine Documents 2-5.3. 27 August 1999, 1.

[5]Forno, Richard. The Art of Information Warfare. Uppublish. New York. 1999, 11.

[6] Ibid. 22

[7]Browning, G., Infowar. www.GovExec.Com

[8] Alberts, D.S., The Unintended Consequences of Information Age Technologies, National Defense University, April 1996

[9] Ibid

[10] Miller, J.H., Information Warfare: Issues and Perspectives, Institute for National. Strategic Studies, National Defense University <

[11] Jim Garamone. Flexibility, Adaptability at Heart of Military Transformation American Forces Press Service Fort Lesley J. McNair, D.C. Jan. 31, 2002, 3.

[12] Alberts, D.S., Defensive Information Warfare.

[13] Miller, J.H., Information Warfare: Issues and Perspectives, Institute for National. Strategic Studies, National Defense University < > March 1995

[14] Glenn Buchan. Information War and the Air Force: Wave of the Future? Current Fad? <>

[15] Fredericks, B., Information Warfare: The Organizational Dimension , Institute for National. Strategic Studies, National Defense University <http://www.ndu.edu/inss/siws/ch4.html>, 1997

[16] Ibid

[17] Ibid

[18] Ibid

[19] Ibid

Street Wars: MOUT and the United States Air Force

by CIC Lee A. Staab III

"Best policy in war—thwart the enemy's strategy, second best—disrupt his alliances through diplomacy, third best—attack his army in the field, worst strategy—attack walled cities" (Sun Tzu).

Revolution in the Cities

Some of the experts in the past have declared that only fools fight in cities. That may have been the rule of thumb in the past, but to make such a pronouncement and abide by it is to shut ones eyes to the inevitability of the future. The future of warfare lies in the streets, sewers, high-rise buildings, industrial parks, and the sprawl of houses, shacks, and shelters that form some of the broken cities of our world. We will fight elsewhere, but as cities and civilizations expand the battlefield of the future will be the cities of the world. The battle of Grozny in Chechnya, Task Force Ranger in Somalia, and the current crisis between Palestine and Israel are all modern day examples of Military Operations in Urban Terrain (MOUT). This paper will examine the difficulties and limitations in conducting MOUT, and based on these difficulties and limitations examine how and why information operations and the Air Force will play a vital role in these operations. These difficulties and the Air Force's capabilities will be used to answer whether or not force structure changes need to be made and whether or not the military is in the midst of a revolution in military affairs.

Information operations is defined as "those actions taken to gain, exploit, defend, or attack information systems and include both information-in-warfare and information warfare and are conducted throughout all phases of an operation and across the range of

military operations" (AFDD 2-5, 2). The focus on information operations is brought about by the preponderance of past evidence that such operations are the key to successful operations in an urban environment. This view is far reaching for the Air Force because the Air Force is the largest purveyor of information in our military. The Air Force supports MOUT in two ways, through information operations and through combat support which, for the purposes of this paper, will be focused on close air support, in which information operations plays a large part. In order to establish a basis for this paper the difficulties faced in past urban operations must be examined.

Difficulties Faced in the Past

Difficulties faced in the past were command, control and communication impedance, friendly fire, identification of civilians, friends and foes and collateral damage. Two specific cases of urban combat will be examined throughout the paper for specific examples (Battle of Grozny and Task Force Ranger) but it is the difficulty in establishing good C3 that needs to be examined first. Task Force Ranger in Somalia got out of hand when the units involved became separated and lost contact with each other.

Why is real time situational awareness in an urban environment so important and why is good command control and communication difficult to establish? An article that appeared in the U.S. Army War College Quarterly examined the importance of cities in future warfare and also examined some of the difficulties of fighting in such an environment. When comparing traditional warfare to urban warfare, it is apparent, at the broadest level of examination, that there is a "profound spatial difference" between the two (Peters 197). "Traditional" warfare has typically been horizontal, with an increasing vertical dimension. In fully urbanized terrain, however, warfare becomes profoundly vertical, reaching both up "into towers of steel and cement," and downward beneath the streets into sewers, subway lines, road tunnels, communication tunnels and the like. The difficulty in maintaining a real time operational picture comes from the multi dimensional battlefield of urban terrain. The multidimensional aspect "fragments units" and "compartmentalizes" encounters, engagements and battles. The leader's span of control can easily collapse and maintaining an accurate picture of the multidimensional battlefield proves very difficult. The Army and Marines are taking steps to distribute communication down to the lower levels—even to the individual soldier in some cases. There is also talk of a "digitized" soldier whose every movement can be monitored, but it is important for those on the ground to know where their counterparts are, not just those located in a command bunker outside the battle zone (Peters 198). These are advancements the Army and Marines are making, what can the Air Force do to improve this situation?

The Air Force can provide support through information operations. Information in war will play a huge part, especially in the area of real time surveillance. "The hardest thing in an urban environment is finding the enemy," (Ackerman). Real time surveillance should be provided by unmanned aerial vehicles such as the predator (though I'm sure better technologies and platforms for this purpose will come out) and platforms of that nature. These unmanned platforms can fly at lower speeds than manned airplanes and there is the factor that if they are shot down there is no loss of human life and no downed pilot to rescue. This system should be set up so that those on the ground can request specific locations to be observed and the video fed directly to those on the ground. This would require a high bandwidth and secure data feed with a light weight receiver for those on the ground. Another useful platform would be an unmanned UAV that was able to act as a thermal imaging platform, again providing data to those on the ground when they need it.

The urban environment also causes disruptions in short range communications and traditional systems, such as radios, experience "reception anomalies" (Richards 198). The Air Force might be able to counter act this by providing a man/unmanned relay station in the air or maybe a system where communication was relayed by satellites. The point is that one of the Air Force's roles in MOUT would be providing an operational picture of the battlefield and reliable communication network. This real-time picture is also essential in minimizing civilian casualties and incidences of fratricide, both of which occur much more frequently in an urban environment than anywhere else.

Intelligence/
Counter Information

A wise man once said, "Know thy enemy and know thyself." Gaining an intelligence picture in Somalia proved to be a difficult task. The U.S. military was operating on the highest technology in the world while the Somalis were operating with relatively unsophisticated technology. "They used the simplest weapons and made minimal use of modern communication equipment… rarely using telephones or radios and ha[d] no radar-controlled air defense systems" (Akers, 7). As a result of this extreme dichotomy in capabilities, typical Air Force's intelligence gathering capabilities such as SIGINT, COMINT, ELINT, and other such passive methods were effectively negated with no effort at all. The United States cannot fall prey to the mistake of "mirror-imaging" its own capabilities/vulnerabilities and must adapt to the situation. What is needed in circumstances like this is a more active

approach, such as using unmanned aerial vehicles to conduct around the clock ISR operations. Human intelligence (HUMINT) plays an increased role in these situations but acquiring such assets can be extremely difficult to come by.

Sometimes the simplest enemy asset is the most overlooked, and it proves to be the most useful. In the Battle of Grozny the weapon of choice for the Chechens was the rocket propelled grenade launcher (Thomas 209). What was considered to be a second weapon by the Russians but was not a weapon at all was the "multitude of information-technology gadgets" used by the Chechens. Cellular phones and commercial scanner systems were of real importance. This system allowed the Chechens to communicate and coordinate combat operations with each other and also allowed Chechens to listen in on Russian conversations. This system proved to be an invaluable force-coordination multiplier. The "Russians felt the Chechens knew what they were going to do ahead of time," hence the Russian's view that the gadgets were like weapons. These are relatively inexpensive and readily available technologies and we have to be able to counteract them. Counter information and disinformation campaigns to negate these capabilities of the enemy must be undertaken. Jamming of communication systems while allowing our own to work, and protecting our own, is vital in establishing information superiority. It is true that technology will never be able to stop a pile of burning tires (Bowden 12) or a courier from delivering their message, but instead of virtually instantaneous communication over a cell phone, there is a significant passage of time before a courier reaches his destination and that just might make the difference in the end.

Combat Support

The Marines are developing a plan where their combined armed teams eschew elements such as artillery and air support for more of a "direct fire combined arms fight" (Ackerman). A combined arms approach and the ability to inflict damage through direct fire is a necessary capability, but why deny yourself an asset such as air support? Nothing saves the day like (accurate) air support when a ground unit is in a bind. For an example, one of the favored weapons used by Russia in the Battle of Grozny was a jet powered flame-thrower that was capable of the same effectiveness as 152mm artillery rounds, and had a maximum range of fire of 1,000 meters, over half a mile (Thomas 209). Air support will play a role in urban combat, but in this environment it is the "slow mover" that reigns supreme.

To clarify, combat support in this scenario is more along the lines of close air support, brought about by a maintained presence in the area, not the strategic strikes in downtown Baghdad conducted by fast movers and stealth aircraft. Right now the AC-130 reigns supreme (for the Air Force) in conducting this type of mission, but employing that aircraft in an environment riddled with SAMs would most likely prove to be ineffective. The AC-130 is mainly employed at night for that reason, but there are times when the military will have to fight during the day. UAVs have already fired missiles in combat and will prove to be a viable alternative in such situations. They can also be used to conduct SEAD missions and pave the way for the heavy hitters. If the threat is made up of MANPADS and weapons of that nature, there is very little that the military can do to eliminate the threat entirely. Information operations prepare the battle field by providing precision targeting, navigation and positioning for weapons and platforms. This reveals a weakness in our approach to combat. GPS is a great system but has some vulnerability associated with it; precautions need to be undertaken to secure this system since it is so heavily relied upon.

Psychological Operations (PSYOPS)

One form of information operation gaining support over the years that cannot be overlooked is psychological operations. Psychological operations should (and hopefully will) play a large role in urban conflicts. Conducting psychological operations effectively is a demanding task that requires an understanding of the target audience and the development of an effective message. Once the category and message have been determined the PSYOP planner needs to determine the type of median to best disseminate the information.

Army field manual 33-1 and 33-1-1 have outlined four different methods: face-to-face communication, audio visual means (television), audio media (radio or loudspeaker), and visual media (leaflets, newspapers, books, magazines and/or posters). The weapon is not how it's sent, but the message it carries and how that message affects the recipient. Face-to-face (interpersonal) communication is the most effective means of transmitting a persuasive message. Audiovisual media such as television, electronic tape recordings, and sound motion pictures are the second most effective means of communication available to the psychological operator. Audio media (loudspeakers and radio) lend themselves to the transmission of brief, simple messages and to personalization by use of the human voice. They require little or no effort by the audience, and generally, they have more appeal than visual media. Also, the barrier of illiteracy may be more easily overcome with audio media than with visual media (printed material). Visual media can transmit long, complex material. Animated or still cartoons may be used to convey themes to illiterate and preliterate target audiences. Visual media generally have the

least amount of popular appeal. Themes are reinforced and the target audience given broad coverage by using several media to deliver the same basic message. For example, radio and television can augment leaflets; face-to-face communication can support newspaper circulation.

The Air Force is able to employ the above methods in a variety of ways. One of the most used is distributing leaflets, which the Air Force accomplishes in a number of ways. Leaflets have been airdropped by hand, disseminated through high altitude free fall, using a static line, unmanned aerial vehicles, and the leaflet bomb. The leaflet bomb, which is exploded at altitude over a target area, is capable of distributing eighty thousand leaflets over an area. The Air Force's EC-130 Commando Solo platform is the premier PSYOP platform of today and has a wide array of capabilities. One development that can be foreseen in the future is an unmanned aerial vehicle equipped with a loud speaker system, thus providing an around the clock presence with no risk to human operators.

They have proven their potential for greatly influencing the overall outcome of an operation. This was especially evident during the Gulf War. On Thanksgiving Day 1990, the 193rd Special Operations Wing began broadcasting "Voice of America" into the Kuwaiti theater of operations, helping to prepare the battlefield psychologically by offering the Iraqi soldiers food, bedding and medical care if they surrendered and reminded them of the consequences if they did not. These broadcasts, combined with the PSYOP leaflet and loudspeaker broadcast programs, were major motivating factors to the estimated one hundred thousand soldiers who surrendered or deserted by the war's end (Psywarrior webpage). The technology level and literacy rates of the target audience impacts on what methods are available to carry out PSYOPs. The United States had taken into account the fact that a large percentage of the population of Afghanistan is illiterate by air-dropping thousands of radios for the people to use and listen to the broadcasts from the Commando Solo in the area. This is a good example of knowing and understanding the target audience; a process that the IO component of the military is heavily involved in. Effective PSYOP campaigns are an invaluable force-multiplier in a region. "To capture the enemy's entire army is better than to destroy it; to take intact a regiment, a company, or a squad is better than to destroy them…To subdue the enemy without fighting is the supreme excellence" (Sun Tzu).

The U.S. military is not the only one that has the capability to participate in psychological operations. In Grozny, the Chechens conducted a very effective PSYOP campaign. The Chechens used mobile TV stations to override Russian TV transmissions and to deliver messages from President Dudayev directly to the people. The Internet was also utilized, in particular to raise funds and assistance from abroad (Thomas 209). This would indicate that the military will have to have the means to deny the enemy this capability and to counteract their actions through counter PSYOP campaigns. All of these actions, denial of information mediums and counter PSYOP, fall within the context of information operations.

Psychological operations does not apply solely to the adversary, it can also be applied to the combatants in the field and the civilians at home through public affairs and similar venues. Urban operations are manpower intensive. It is true that unmanned aerial vehicles can and will be used more and more in support of combat troops, and there has been talk of having robots follow infantry and armor battalions in order to conduct some of the riskier operations, but as of right now there is no technology that is even close to the level of sophistication necessary to successfully navigate and engage in the ever changing urban environment; it will be quite some time before real-life "Terminators" are fighting our wars. Until that time combat in urban operations will be fought mainly by human participants and as a result, such operations have the potential for a soaring casualty count. Reasons for this are the dynamic environment discussed earlier and the compartmentalizing of engagements, coupled with a higher potential for fratricide (hence the need for the real-time situational awareness). PSYOPs conducted by the public affairs can be used to galvanize the support from home that is so necessary in today's interconnected world. Support from other countries is also needed and an effective PSYOP campaign is a method of ensuring that the support is there.

Force Structure

What the preceding paragraphs have demonstrated is that information operations will play an increased role in operations to come. There is also an underlying complexity in information operations. The definition itself is complex, and IO is further subdivided into information-in-warfare and information warfare. Information-in-war is composed of multiple elements mainly centered around ISR, but there are many components that make up information warfare: offensive and defensive counter information, PSYOP and counter PSYOP, computer network attack, deception and counter deception…the list goes on. The complex nature of IO makes the creation of an IO core within the Air Force an inevitable necessity. The inevitability of urban combat makes the formation of units that are specially trained to operate in this environment another necessity. The Marine Corp is exploring just such a unit in its Project Metropolis, which calls for elite units that are specially trained in

urban warfare (Ackerman). This will not result in a significant change in the Air Force's force structure, but is a change that the Air Force needs to take into consideration.

Revolution or Evolution?

The question remains: Is the military experiencing the normal evolutionary changes that come about over time, or is the military in the midst of a revolution? Look at the situation that was laid out in the preceding pages. The combat environment is becoming more urbanized. We will still fight on the deserts, in the hills and on the plains, but the unavoidable battlefields of the future are the world's cities. Information operations and the Air Force will play a large part in these operations and is already experiencing an increased role in all operations. A common element throughout much of this paper was the use of UAVs. These systems are not fully developed but money is pouring into the R&D of these platforms and they will play a significant role in the future.

The importance of information operations, the Air Force's increasing role in MOUT—along with the force structure changes—and the movement to unmanned aerial vehicles providing information and combat support over the urban battlefield are all indications that the military is in the beginning stages of a revolution. When the revolution is in full swing, perhaps in the 2020-2030 timeframe, the specialized urban environment units of the all of the military's services will conglomerate on the latest crisis in some foreign city. These specialized troops will deploy to the location with their UAVs in hand and, through the support of the adolescent information operations core, will be able to bring the crisis to an end with minimal loss of life and damage to property.

In one moment in time, our service members will be feeding and clothing displaced refugees - providing humanitarian assistance. In the next moment, they will be holding two warring tribes apart - conducting peacekeeping operations. Finally, they will be fighting a highly lethal mid-intensity battle. All on the same day, all within three city blocks. It will be what we call the three block war." General Charles C. Krulak, USMC

Works Cited

Books

AFDD 2-5 "Information Operations" Air University. Maxwell Air Force Base, Alabama. 5 August 1998.

Army Field Manual 33-1 and 33-1-1 Downloaded from http://www.artrans.com/rmsg/mfm.htm

Bowden, Mark. Black Hawk Down. New American Library, New York, 2000.

Online

Ackerman, Robert K. "Training, Not Technology, Is Key to Urban Warfare" 30 April 2002. http://www.us.net/signal/Archive/May01/training-may.html

Krulak, Charles C., General USMC. "Urban Operations" 01 May 2002. http://www.urbanoperations.com/

Psywarrior Webpage "Psychological Operations/Warfare" 10 April 2002 http://www.pipeline.com/~psywarrior/psyhist.html

Publications

Akers, Frank H. Jr. "Task Force Ranger: A Case Study Examining the Application of Advanced Technologies in Urban Warfare." National Security Program Office, November 2000.

Peters, Ralph. "Our Soldiers, Their Cities." Parameters, U.S. Army War College Quarterly, Spring 1996, pp. 43-50.

Thomas, Timothy L. "The Battle of Grozny: Deadly Classroom for Urban Combat." Parameters, U.S. Army War College Quarterly, Summer 1999, pp. 87-102

RMA: Info Ops

by C1C Grant Coppin

Nowhere is it written that a Revolution in Military Affairs (RMA) has to take part within a certain time window or during a specific era in history. It is not said that it must be a sudden revolution, with immediate results and outcomes. Nor is it agreed that it must be resolute in its conclusion and ramifications on warfare. Therefore it can be assumed that an RMA can take place over any length of time, possibly spanning several centuries, and come to no solid conclusion regarding the way a military fights, how it is structured, and the doctrine to which it subscribes. History has witnessed one such Revolution in Military Affairs, and current time continues to struggle with the century-long dilemma, the news media. [1]

Over the course of a century and a half, the news media (and now international news media) has altered the way the US Armed Services proctors its wars, the way it organizes its forces, and the way it defines its basic policies and guidelines. In a slow and sometimes painful fashion, the love-hate relationship between the media and the military has reshaped the concept of warfare as defined by classical theorists. The two have been locked in an intricate dance around alliance, acceptance, mutualism, antagonism and combat, which has swayed the military construct to and fro.

What is being witnessed has been in progress since the Civil War. It is the complete restructuring of the Clausewitzian Remarkable Trinity. [2] According to Clausewitz, the Remarkable Trinity is the crucial relationship between "the people, their government, and their Army." [3] The media has entered as a fourth component to the trinity, serving as a relay between the three. It has remained the medium through which two purposes were traditionally served:

1) It informed the public as to what its government was doing regarding policies and how the policies were executed and 2) It served as an independent record of history. However with its increasing capability to cover wartime events, it has now given itself a third function: 3) "the public examination of the purposes and goals of armed conflict." [4] By its key location equidistant from all three players, it can function as an information relay, amplifier, dampener, or blocker. Its power to alter the Remarkable Trinity has therefore altered the way a military must think, organize and fight in order to preserve the perfect triangular relationship in the state. The alteration has not been a specific event, but rather a gradual progression over time. It is possible to analyze the way the media has served as a Revolution in Military Affairs by reviewing the military-media relationship over the past 150 years during key military operations. From an all-encompassing historical perspective it possible to see how warfare has been altered and how today's US military is trying to maintain the delicate dance between its operations and the international news media.

Historical Background

Civil War

Mathew Brady and his team of photographers first brought the concept of war reporting to American mainstream society in 1862 when he displayed his photographs of the Civil War at the New York Gallery. [5] He called the exhibit the "Dead of Antietam," and its images of the bloated and dismembered corpses strewn across the battlefield shocked the unsuspecting gallery patrons. For the first time in history, the horrible outcomes of warfare had been brought into the limelight. Prior to the Civil War, warfare in general had been viewed as a glorified means to an honorable end. Information was gained through the cleansed stories of those who survived and the innocuous field reports forwarded to the newspapers. The realities of warfare remained in the hearts and minds of those who were there, and the pomp and circumstance was all that trickled into the public life.

The photos portrayed the Union and Confederate Armies on equal levels, neither seeming more guilty or innocent than the other. What weighed heavy on public hearts were the atrocities committed by both sides, and both were held accountable for their actions. For the first time neither side was seen as heroic or villainous. The true enemy appeared to be warfare itself and the true victims to be those caught in its wake. A sense of disillusionment with war-related policies and goals ensued. The American public began to question whether or not such brutal actions in war were necessary and key individuals and policy-makers began to reconsider how warfare was conducted. The *Jus in Bello* [6] philosophy of warfare came into its own and the tenuous relationships inside the consolidated US Army quivered over the thought of being held accountable for their actions. While no official changes in military structure or doctrine was planned, the future alterations in how a military could fight were slowly being predicted. [7]

World War II

With the introduction of news reels and radio into war correspondence, more timely information on the war in Europe and the Pacific was sent back to the states en masse. Americans could catch war updates at the local movie theater or turn their radios to NBC Radio every evening to learn what had happened that week. War correspondents frequented the battlefield to get on-the-scene information. While no doctrine was created to deal with handling the more timely correspondence reports, most forward-deployed Army and Army Air Corps units designated a single officer as Chief of Public Affairs. His duties included handling the reporters who sought information on the local operations, alongside his duties as a soldier. [8]

In what may be the first recorded use of the news media in warfare, the OSS used civilian radio frequencies and civilian news broadcasts to send coded messages to OSS Operatives deep behind enemy lines in the European Theater. [9] For the first time the military acknowledged the potential use of a medium recognized internationally as neutral. By the end of the war, both Allied and Axis powers had adopted several Psychological Warfare Operations (PsyOps) over civilian radio broadcasts in an attempt to use the media as a weapon. PsyWar had found a new platform, ripe for exploitation, and the world' most powerful militaries found a new way to wage war.

Korea and Vietnam

After the firm alliance between the military and the news media in World War II, the military learned of the negative affects the media can have on operations during the Korea and Vietnam wars. The Korean campaign was plagued by indifferent and apathetic sentiments back home. The feelings were largely the result of the media's reports, or lack thereof. [10] After WWII, expectations had been raised regarding access to timely information. For reasons outside the scope of this report, the US news media chose not to report the events in Korea with as much fervor and passion as they did in WWII. When unfavorable reports surfaced, the immediate military response was strict censorship. [11] With reports few and far between, and strict military censorship imposed, Americans grew indifferent to the cause and the sentimental support of the people was lost. Furthermore, the link between the three nodes of the Remarkable Trinity drifted apart, and politicians and military leaders were often pitted against each other, as the news reports, which so many believed to be true, seemed to conflict with the field reports in Korea. Inten-

tions crossed and communication channels broke down. For those reasons the Korean War is still considered the "Forgotten War" in US history.

The Vietnam War confirmed to warriors just how important the role of the media is in the Trinity, and how dangerous an antagonist relationship with them could be. After the shaky military-media relationship in Korea, Vietnam pushed it to its breaking point. Both the domestic and international media organizations took a firm anti-war position at the onset of the conflict. The "Hanoi Jane" Fonda incident wound up being an incredible propaganda victory for the North Vietnamese Army. The US military never formally responded with any defense in the new warfare platform, possibly a result of the disillusioned media-related sentiments of the Korean War. Nevertheless, the defeat was detrimental to the war for hearts and minds back home, and the importance of winning the new media war was made obvious. [12]

Gulf War

Operations Desert Shield and Desert Storm was the first major conflict where the media was considered for use in war. Saddam Hussein chose the Cable News Network as a key player in his plan for the defeat on the US. He called upon the adversarial military-media relationship experienced during the Vietnam War to defeat the US, and his plan officially called for CNN to "do what was necessary to undermine the will of the American people" and put pressure on the coalition forces to withdraw from the conflict. However he overestimated the US's capability to field press inquiries and editorials and defend the sanctity of the US Remarkable Trinity. President George Bush and Generals Colin Powell and Norman Schwarzkopf worked hard to create a media-friendly environment yet still maintain information security. While not having the ability to fall back on any media-related doctrine, as none existed at the time, and having to keep up with real-time imagery and reporting, the three managed to reach a relative level of success. On lower levels, military Public Affairs officers, whose primary duties remain fielding press questions, managed to find a happy balance between satiating the media's hunger for updates while making sure the information was operationally secure. However they too lacked a doctrinal foundation upon which to base their responses. Reporters often did cross the lines of operational security, and the tenaciously "neutral" position most news bureaus took created a feeling of mistrust among the higher military echelons and small corps of Public Affairs Officers. [13] Although still lacking formal media-related doctrine, and failing to take advantage of the new global media as a weapon, as was Hussein's intent, the Gulf War did demonstrate how flexible the military-media relationship could be. The military realized the diverse news bureaus could be contained and their ability to dictate (mostly) what information was reported was restored.

Military and the Media Today

Today press bureaus are becoming increasingly global, with the advent of global television and real-time data relays, video, pictures and reports can be sent across the globe in a matter of minutes. With their globalized capability, these media organizations have created a less secure medium through which information is sent. Videos, pictures and reports are more easily accessible by all forces, including the enemy. All that is required is a radio and/or a television tuned to the now global stations.

The newly globalized world and global-capable technologies have created an even more dangerous international news media for two reasons: 1) the real-time access to wartime events create a greater risk to operational security and 2) the environment upon which the Remarkable Trinity is projected has grown demographically and geographically. [14] Real-time data relays offer the enemy greater access to a "poor man's information war." [15] US enemies can simply tap into the wide pool of international news channels to view a relatively accurate "God's eye" view of the battlefield and coalition movements and intentions. Saddam Hussein's Republican Guard commanders had their televisions tuned to CNN "24/7" to monitor US troop movements in Iraq. [16] Milosovic frequently watched Secretary Cohen's press briefings to track US bombing target priorities. [17] The triangular structure of the Remarkable Trinity is also harder to maintain due to the global nature of the news media. The "people" and "government" corners of the Trinity now encompass officials and citizens of all nations, as they are being forced to act as key players in the relationship. With a shared access to information, international pressures now have a greater influence on domestic concerns, which then influences the policies and tactics of warfare. A ragtag Somali warlord managed to force the removal of US warships from his coast, simply by tapping into an anti-interventionist sentiment among the American populace in 1994. He arranged a quick segment on CNN depicting his thugs chanting anti-American slogans and toting Russian AK-47's shortly after the images of dead US Army Rangers dragged through the streets of Mogadishu aired on the network. His plan worked, and the two segments managed to influence US domestic emotions enough to force the warships to leave the Somali coast. Surely Clausewitz didn't have third-rate warlords in mind when he conceived the Remarkable Trinity concept.

Changing Military-Media Doctrine

The US must answer to these new global threats presented by an international news media. It must decide

whether the media must be avoided, accepted or manipulated as a weapon. Currently no media-specific defense doctrine is in place, however media-related doctrine has been added to existing doctrine on Psychological Operations [18] and Information Operations, and provides general guidelines for handling the media presence and requests.[19] According to DOD Directive S-3600.1, Information Operations: "Public Affairs during Information Operations must not focus on directing or manipulating public actions or opinions but rather seek a timely flow of information to both external and internal audiences." [20] The statement exists as one paragraph among a hundred pages. Furthermore, the joint doctrine only provides recommendations to Public Affairs Officers in order to establish rapport with the news media. [21] No doctrine provides a guideline as to how the military-media relationship should be used in warfare or as an instrument of war.

Media-specific doctrine is on the way. Military strategic thinkers and theorists are now cranking out theoretic papers regarding the military-media relationship by the dozens. Military think tanks such as the Air University and the US Army War College are now focusing their efforts on the Information Revolution, and the changing face of battle as a result of the global media. Military journals are also following suit. As Brig. Gen. Ronald T. Sconyers quoted in Airpower Journal, "In future conflicts, the employment of communications with the media and public will be on a par with employing weapons effectively." Due to the shear mass of the theories being presented, and the theorists' high degree of credibility (ranging from Gen. John Shalikashvili to Gen. Ronald Fogelman), the cries for reform will not go unanswered.

Changing Military Structure

The international media is now forcing a change in the way the US military is structured and how its assets are allocated. The Public Affairs Officer (PAO) AFSC in the USAF is growing in importance and command structure and it is now crucial for the PAO to be kept in the loop regarding what deception tactics are being used and what elements are OpSec essential. [22] The officer can then more precisely field media requests regarding the sensitive information. Plans are also underway to create a whole new AFSC given the duties of a Political/Military Officer (PMO), who would be responsible for acting as a liaison between the "government" and "media" nodes of the new Remarkable Trinity. The general idea is to provide a link between the government, military and media to ensure sensitive military-related information is not distorted during the flow from military to media to government. The PMO would also serve as a continuation of the PAO duties, in that the two would "hand-off" the OpSec duties depending on which Trinity node the information is intended for. [23]

"Presentation" is also becoming a buzzword regarding military structure. Forward-deployed forces must be presented in a favorable manner considering its media/political environment. In some instances certain elements of force structure must be kept on the back burner, as is the case at King Fahd AB in Saudi Arabia, where an all-male force must be presented. Female soldiers must be kept out of the international limelight due to the customs of their surroundings, as images of female soldiers in uniform may offend Pax-Arabia and jeopardize the future of the airbase. In a sense, the international media is not only changing physical force structure, but "perceived" force structure.

Changing the Fight (SOFTWAR)

The news media is also changing the way war is waged, regardless of whether or not doctrine is in place to support it. A new form of warfare is slowly being discovered and exploited in the form of "the hostile use of global television (GTV) to shape another nation's will by changing his vision of reality." [24] The term is being coined, "Softwar," and it has opened a new front, the public forum. The tactics can range from directly shaping an enemy's perception to indirectly shaping it via the quirks and qualities of the international media. [25] Perceptions can be directly shaped by broadcasting state-originated information over a global television, as Slobodon Milosovic did to incite Serbian nationalism. Milo Vasic, editor of the Serbian Vreme Magazine commented, "Hatred had to be created artificially, and the key instrument was TV. Before we had the real war, we had the TV war." [26] TV warriors such as Milosovic are finding a growing arsenal from which they can wage their media campaign. The new weapons include "media amplification," "political throw-weight," and "quality roulette," to name a few. [27] All three are various forms of distorting reality by giving undue merit to events, invalid comparison of key players or basic false reporting. They range from the practical to the audacious, and thus far they have worked. Kuwaiti businessmen hired an American PR firm to use "quality roulette" to acquire enough "political throw-weight" to force the US to intervene in the invasion of Kuwait. It worked.

Skeptics of the new battlefield describe the access to GTV as merely another platform from which Psychological Operations can be launched. However most theorists believe global television and the global media to be too important to the new Remarkable Trinity to be treated as an asset or simple platform. Chuck de Caro, President of AEROBUREAU Corp., suggests global television is a unique battlefield, worthy of specific strategies and tactics. De Caro

recommends the US embraces the new battlefield by creating holistic strategic PsyWar television doctrine and unique "Soft-jamming" tactics. According to de Caro, the US could win the GTV war by employing K-band and C-band technologies to tap into the television networks and uplink military objectives with civilian airwaves, in a sense controlling what the people see, think and feel. [28]

With the international media becoming a key player in policy and decision-making, the battlefield is changing, or at least a new one has opened. The US military needs to create an all-encompassing policy to counter the new threats and opportunities presented by a globally accessible information source. So far little has been done, however the waters are currently being tested and there is light appearing at the end of the tunnel.

Conclusion

The media RMA has not been a concentrated and instantaneous event, but rather a revolution increasing exponentially over a century and half, which has reshaped the Clausewitzian classical view of the Remarkable Trinity. From the days of the Civil War, to World War II, on to Vietnam and into the present, the news media has slowly shaped the way the US military thinks, organizes and fights. With the information-related boom in technology in the past decade, a more powerful media has muscled its way into the Remarkable Trinity as a key international actor, and created an entirely new battlefield in the process. The US has recognized the significance of the new battlefield and is currently taking steps to maintain a strategic dominance over the global television medium. Hopefully sound doctrine, effective force structure and precise tactics will help the nation embrace the media RMA and dominate the new battlefield at the turn of the 21st century.

Bibliography

Adams, James. "The Role of the Media." MSS 385 Publications Collection, Vol. VIII. USAF Academy. Accessed 28 April 2002.

Asprey, Robert B. *War In the Shadows: The Guerrilla in History*. New York: William Morrow and Company, 1994.

Clausewitz, Carl Von. *On War.* eds./trans. Michael Howard and Peter Paret. Princeton: Princeton University Press, 1976.

de Caro, Chuck. "Sats, Lies, and Video-Rape: The Soft War Handbook." In *Information Warfare*, Ch. 4. 1995. Roberts, Ted L. Assistant Professor of Military History. Interview by Author. 11 November 2001. USAF Academy, CO.

Hill, Raymond R. Jr. "The Future Media-Military Relationship: The Media as an Actor in War Execution," Ch. 1. Report: Air Command and Staff College, 1997.

Johnson, Douglas V. II. "The Impact of the Media on National Security Policy Decision Making." Report: US Army War College. Strategic Studies Institute, 1994.

Joint Publicatin (JP) 1. Joint Doctrine of the Armed Forces of the United States. 10 Jan 1995. JP-02, UNAAF. 24 February 1995.

Mark, Henry. "Adhering to Their Enemies: Jane Fonda in North Vietnam." Frontpage Online Magazine. 15 March 2002. Accessed 21 April 2002. Available from http://www.frontpagemag.com/guestcolumnists2002 holzer03-15-02.htm. Internet.

The National Portrait Gallery. Biography: Mathew Brady. Washington: Smithsonian Institution, 2001. Collection on-line. Accessed 9 December 2001. Available from http://www.npg.si.edu/exh/brady/timeline/timeli2.htm. Internet.

Sconyers, Ronald T. "Revolutionary Air Force Public Affairs: The Vision." In Airpower Journal 9, no. 3. 1995.

Smith, James M. Director, INSS. Interview by Author. 10 April 2002. USAF Academy, CO.

United Nations Institute for Disarmament Research. UNIDIR Meeting Transcript. Geneva. On-line transcript. Accessed 15 April 2002. Available from http://www.unog.ch/UNIDIR/eiw.htm. Internet.

Walzer, Michael. *Just and Unjust Wars.* New York: Basic Books, 1977.

(Endnotes)

[1]Note—the term "media" refers to news print, magazine articles, photographs, editorials and video available relative to the time period.

[2] Douglas V. Johnson II, "The Impact of the Media on National Security Policy Decision Making," (Report: US Army War College), Strategic Studies Institute, 1994.

[3] Carl von Clausewitz, *On War,* eds./trans. Michael Howard, Peter Paret (Princeton: Princeton University Press, 1976), 55.

[4] Raymond R. Hill Jr., "The Future Media-Military Relationship: The Media

as an Actor in War Execution," Ch. 1 (Report: Air Command and Staff College, 1997), 3.

[5] The National Portrait Gallery, Biography: Mathew Brady, [collection on-line] (Washington: Smithsonian Institution, 2001, accessed 9 December 2001); available from http://www.npg.si.edu/exh/brady/timeline/timeli2.htm; Internet.

[6] Michael Walzer, Just and Unjust Wars (New York: Basic Books, 1977), 21.

[7] The National Portrait Gallery, Internet, 2001.

[8] Robert B. Asprey, War In the Shadows: The Guerrilla in History (New York: William Morrow and Company, 1994), Ch. 24.

[9] Ibid., Ch. 26.

[10] Ted. L. Roberts, Assistant Professor of Military History, (USAF Academy, CO), Interview by Author, 11 November 2001.

[11] Ibid., 2001.

[12] Henry Mark, "Adhering to Their Enemies: Jane Fonda in North Vietnam," Frontpage Online Magazine, 15 March 2002, available at http://www.frontpagemag.com/guestcolumnists 2002/holzer03-15-02.htm, accessed 21 April 2002.

[13] Ibid., 30.

[14] United Nations Institute for Disarmament Research, UNIDIR Meeting Transcript, Internet, 1999, available at http://www.unog.ch/UNIDIR/eiw.htm.

[15] Chuck de Caro, "Sats, Lies, and Video-Rape: The Soft War Handbook," Information Warfare, Ch. 4, 1995.

[16] Ibid., Ch.4.

[17] Ibid., Ch. 4.

[18] Joint Publicatin (JP) 1, Joint Doctrine of the Armed Forces of the United States, 10 Jan 1995, JP-02, UNAAF, 24 February 1995.

[19] Raymond R. Hill Jr., Ch. 5, 36.

[20] Ibid., 37.

[21] Ronald T. Sconyers, "Revolutionary Air Force Public Affairs: The Vision," Airpower Journal 9, no. 3, 1995, 39.

[22] James M. Smith, Director INSS, (USAF Academy, CO), Interview by Author, 10 April 2002.

[23] Ibid., 2002.

[24] Chuck de Caro, Ch. 4, 4.

[25] James Adams, "The Role of the Media," MSS 385 Publications Collection, Vol. VIII., USAF Academy.

[26] Ibid., Ch. 4, 3.

[27] Ibid., Ch. 4, 6.

[28] Ibid., Ch. 4, 7.

Combat Search and Rescue for the German Armed Forces

by C1C Georg G. Schafer, GAF

The German Air Force (GAF) doesn't have a fully operational Combat Search and Rescue (CSAR) component yet. Due to the old light transport helicopter that is still in use, the Bell UH-1D there is a lack of capability to do CSAR. But the future light transport helicopter of the German Air Force the NH 90 will have the capability to perform CSAR missions. This paper wants to show how CSAR missions should be set up within the German Armed Forces doctrine by looking at the current US Air Force Doctrine and what equipment is needed to be able to accomplish fully independent CSAR missions.

Combat Search and Rescue operations are personal recovery operations in hostile territory. It is important to recognize that CSAR involves Combat. CSAR is not reduced to rescuing downed pilots; it also means to be capable of rescuing special operation forces or any other crew, group or team operating behind enemy lines.

Joint Publication 3-50.20 states that CSAR operations have exceeded the capabilities of the component commanders in their own operations and require the efforts of two or more components of the joint force to accomplish the operation. This shows that they require precise planning and coordination between the involved services. That leads to the conclusion that extensive joint training is required. Especially since it is proven that the first 15 minutes after the initial phase of the operation are very critical.

Historically, U.S. forces have put little emphasis on CSAR but expanded enormous effort on it in time of war. CSAR goes back to the beginning of manned flight. The first aerial CSAR missions didn't appear until World War II. Navy Kingfisher amphibious aircraft fished downed pilots out of the Pacific while surviving fighter planes gave aerial cover. Not only did they deny enemy fighters from penetrating to their downed buddies, but they also attacked approaching boats and ships if necessary.

In Korea the need for emergency radios and transmitters was discovered. Albatross amphibious aircraft were used as rescue vehicles while F-51 Mustangs gave air cover. There wasn't a joint effort during these operations yet. In Vietnam, due to the increasing Surface-to-Air Missile (SAM) threat CSAR missions got extensively more dangerous. In the beginning of the war many CSAR missions failed because there had not been enough emphasis in the planning and coordination process. Later in the war the CSAR missions were more successful because personnel got more proficient. The biggest CSAR event in the war, Bat 21 Bravo/Nail 38 Bravo showed that it is not necessary to rescue the personal by air transportation. In this case, air superiority could not be established, so a small ground unit evacuated the downed men.

In the Gulf war a Special Operation Forces (SOF) team was rescued by an aerial CSAR. On the first day of the ground war, January 24th 1991, a 140 man strong SOF team was discovered by locals. An immediate joint rescue force consisting of United States Air Force (USAF) F-16s and UH-60s of the 160th

Special Operation Aviation Regiment rescued the team without casualties. Time was very critical in this case; heavy enemy forces were almost in range when the team got rescued.

During Operation Deny Flight over Bosnia-Herzigovina in 1995, Captain Scott O'Grady was shot down by a SAM over Serbian-controlled territory. He escaped from the Serbs for 6 days before a CSAR team could rescue him. During Operation Deny Flight the Combined Air Forces had established a Combined Search and Rescue Center (CSRC) in the Combined Air Operation Centre (CAOC) in Vicenza, Italy. A combined rescue team was deployed from there to establish local Air Superiority while a Marine task force recovered Captain O'Grady.

Especially the more recent CSAR operations show that it is important for CSAR operations to have joint support. The individual services don't have all the capabilities that are needed during a CSAR operation. Time has been a very critical factor during all recent operations. A recent test at Nellis Air Force Base (AFB) in Nevada showed that the odds turn against the rescue team after 2 hours, according to Whitecomb.

German forces haven't been involved in combat operations since WWII until Operation Allied Force in March 1999. One Squadron of Tornado ECR was stationed in Piacenza, Italy and took part in Combined Air Operations from there. Their primary mission was Suppression of Enemy Air Defense (SEAD). That was the first time that German military personnel were in danger of being shot down and captured by the enemy. CSAR operations were covered by the Combined Search and Rescue Centre in Vicenza, Italy.

For future operations it might be necessary that German Forces can deploy CSAR operations without allied help, since it is a critical resource and allied CSAR forces might be already deployed by their own military forces.

CSAR is a very important type of operation since it can affect a country's war-making capability. Combat casualties influence the populations' support for a campaign, therefore it is critical to keep them as low as possible. The population at home can be a centre of gravity in the enemy's campaign plan. By capturing military personal and using them in the media to decrease popular support of the war, the enemy will have a very effective tool to affect a nations' war-making capability. This had been shown to a great extent during the Vietnam War.

It does not only affect the population on the home front, it also greatly affects the morale of one's own troops. It is proven that soldiers put more effort in their mission when they know that friendly forces will try to rescue them before they get captured. The conclusion is that CSAR is a very important factor in a country's war making capability. The German forces have relied on allied CSAR because they neither have the equipment nor the doctrine to deploy CSAR forces.

Just recently the German Air Force (GAF) started to train CSAR helicopter crews on the Bell UH-1D in Holzdorf, Germany. The Bell UH-1D is not capable of a true CSAR mission. It lacks armor, range, endurance, defensive counter measures and especially modern avionic equipment that allows' low level flights deep into enemy territory. Therefore it is just used as a trainer for future CSAR air crews.

With the new helicopter NH 90, which is going into service with the German forces in 2004, the GAF will have a very capable CSAR platform. France, Germany, Italy and the Netherlands were working on the NH 90 Project since the early 90s when the development contract had been signed. From the beginning, two different helicopters on the same platform were developed. There was the Tactical Transport Helicopter (TTH) and the NATO Frigate Helicopter (NFH). The German Army is buying 108 LTH, the GAF 73 LTH, 23 of these are going to be equipped for CSAR and the German Navy is buying 38 NFH NH 90 helicopters. The first CSAR capable helicopters will be going into service in 2006.

The NH 90 is a 9 ton class helicopter with two Rolls Royce/ Turbomeca RTM 322 or two General Electric/ Alfa Romeo GE T700 – T6E engines each producing 1690 horsepower. It is capable of carrying 20 fully equipped soldiers over a range of 547 miles with a speed of 185 mph. The CSAR version is capable of air refueling to extend range for flights deep into enemy territory. It is equipped with self-sealing tanks, capable of sustaining hits of 12.7 mm ammunition. Further it has a radar and laser detecting system as well as sensor for incoming surface to air missiles, both connected to chaff and flare dispensers. The engines have an infrared suppressor system and are equipped with cable cutters. The Internal Navigation System is combined with Global Positioning System Navigation to allow exact, independent navigation. This system, combined with an advanced navigation computer system, allows one man cockpit operation. For night, bad weather low level missions it is further equipped with a digital map, IFR equipment, weather radar capable of imaging the ground surface, pilot Forward Looking Infrared, ground warning equipment and electrical deicing rotor blades. These facts make the NH 90 CSAR a very capable helicopter with very good combat survivability properties.

The size, capabilities and mission profile make it very similar to the HH60G Pave Hawk. The HH60G is the main CSAR helicopter in the USAF

besides the bigger MJ53J Pave Low III.

The NH 90 CSAR Combined with the Kommando Spezial Kraefte (Commando Special Forces—KSK SOF), the future Tiger PAH-2 attack helicopter, which will be introduced in 2003 and is also capable of close air to air engagement, the future AM 400 transport plane, which will be capable of refueling helicopters, and the Eurofighter 2000 for Air Superiority, will be a great task force for CSAR from the technical standpoint

But it is not only the equipment that has to be suited for CSAR, there also has to be a doctrine that directs personal and machinery into the right direction.

Since the equipment as well as the structure of the German military is very close to that of the American military, both are using similar tactics and strategies. The NATO command structure helps to standardize military procedures. This will make combined CSAR operations similar to those during Operation Deny Flight a lot easier.

The American Doctrine is published in the Joint Publication 3-50.20. The Doctrine is a good frame work but does not ensure certain important criterias. It does not forcefully ensure that organizations and procedures are indeed joint. It says, that components should consider joint CSAR only if their own capabilities are exceeded. It should acknowledge that even if service capabilities are not exceeded, pre-planned joint CSAR efforts are practical and appropriate and also merit initial consideration, according to JFQ.

It does not guarantee that the lessons learned from recent successes are incorporated on the combatant command and joint task force level. There is no doctrine loop incorporated into the Joint Publication. This should be highly emphasized, since lessons learned from history can be vital in future operations.

The command structures in the Publication are too complex, which allows for failures and confusion within the system. According to the Publication, the theater's JFC is responsible for CSAR. He has to establish the Joint Search and Rescue Center . The Rescue Component Centers is the responsibility of the Joint Forces Component Commanders. Since both the JSRC and the RCCs have the similar responsibilities they often do the same work. The effort of work is doubled and there is no clear line of command between the JFC, the JSRC and the RCCs.

It should also emphasize joint training to a much higher degree and ask for pre defined joint planning, command and execution staffs and teams. This would mean that there are ready to go CSAR teams with great experience through extensive training. These could be assigned to the theater JFCs quickly and would aid a very mature tool to the JFCs hand.

These weaknesses in the Publication are known to the Department of Defense (DoD) and the Joint Chief of Staff. They are working to update the Publication to improve the quality and effectiveness of CSAR.

For the German CSAR Publication this means that the U.S. Joint Publication 2-50.20 is a very good framework. It should be taken over with the improvements mentioned. It would be very important to set up a joint training facility where the CSAR forces can train constantly.

Considering how essential CSAR can be to a country's war-making capability, it is essential for the German Armed Forces to have CSAR-capable forces to either work independent or in combined operations. The capability of CSAR does not only help the population at home by producing war heroes and keeping casualties low, it also helps the morale and the will to fight of the fielded troops. Since both Air and SOF assets lower costs and casualties in war, these will be the kind of operations future war planners are going to rely on. Especially for them, since operating behind enemy lines, CSAR is going to be essential.

Works Cited

Air Force. Doctrine Document 2-1.6. SEP 1998

Federation of American Scientists. Combat Search and Rescue. April 2000. 03 NOV 2002 . <http://www.fas.org/man/dod-101/sys/ac/csar.htm>

Gerharz, Juergen. Europaeische Sicherheit:NH-90eineuropaeischesHubschrauberprogramm. JUL 2000. 02 NOV 2002 <http://www.gfw-sicherheitspolitik.de/ES00-03GerharzNH90.htm#Geräteauswahl>

JFQ. Spring 1998. 02 NOV 2002 <http://www.dtic.mil/doctrine/jel/jfq_pubs/1018.pdf>

Joint Pub 3-50.20. Doctrine for Joint Combat Search and Rescue. JAN 1996.

Menges, W. Der NATO Hubschrauber 90: Der zukuenftige Vielzweck-Hubschrauber. FEB 1997. 03 NOV 2002 <http://www.german-helicopter.com/Pages/content/cont_nh90.html>

Whitecomb, Darrel, Col, USAFR, Retired. Combat Search and Rescue: A Longer Look. 2000.

"To subdue an enemy without fighting is the supreme excellence."
Sun Tzu

The New Longbow: Space Weaponry, Medieval Knights, and the Future of the United States at War

by C1C Jared Smith

I have recorded these events in the hope that the readers of this history might profit from them, for there are two ways by which men may reform themselves, either by learning from their own errors or from those of others… For it is history alone which without causing us harm enables us to judge what is the best course in any situation or circumstance. [1]

Polybius, *The Rise of the Roman Empire*

The mounted knight of the thirteenth and fourteenth centuries was the unrivaled ruler of the medieval battlefield. Riding atop a robust war-horse and clothed in heavy armor that dependably protected the body, the knight possessed the power and the ability to freely maneuver about the field and strike fear in the hearts of the unfortunate yeomen on foot; but their time for supremacy faded with an increase in technology and change of warfare. French knights of the Hundred Years War, despite their superiority in numbers, training, skill, and equipment in their discipline, met their horrible fates at the tips of English arrows at countless battles such as Crécy, Poitiers, and Agincourt. Their end arrived unsuspectingly, even after "the flower" of the French nobility repeatedly fell by these means the knights refused to believe that English peasants armed with longbows could stop the shocking assault of the French lance. [2] Their conceit and self-inflated air of chivalric invulnerability combined to produce senseless carnage and sacrifice unparalleled in medieval times:

> In France those absurd perversions of the art of war which covered themselves under the name of chivalry were more omnipotent than any other country in Europe. The strength of the armies of Philip and John of Valois was composed of a fiery and undisciplined aristocracy which imagined itself to be the most efficient military force in the world, but which was in reality little removed from an armed mob. [3]

In the same fashion, today's American fighter pilot prides himself on being the finest on earth, unmatched in numbers, training, skill, and equipment. Pilots of the United States Air Force, Navy, and Marine Corps can effortlessly dispatch any threat in the air, and any potential foe would be a fool to contest them; but this comparison applies only to the fighter pilots and aircraft of other nations, and not to totally new forms of warfare.

Eerily similar to the French knights 650 years them, today's fighter pilots are remarkably vulnerable to increases in technology that can significantly alter warfare. The perpetually advancing space weapons program, coupled with improvements to laser weaponry, will become the new longbow to today's chivalric fighter pilots; these men will share the same fate as the French knights at Agincourt if they do not voluntarily yield their current vanguard status to the progressions of warfare and recognize that the regression of their discipline follows a historical theme. For the benefit of all, air power and space power need to become coequal, each with its individual sphere of offensive, defensive, and support arms. Just as it did the knights no good to discount the role of the medieval archer and save valiant death on the battlefield for themselves, today's airpower advocates cannot disregard the current and future role of space power, and subjugate it to a solely supportive role.

Medieval knights had fair reason to discard the importance of the armed peasantry. The mere thought that a man outside the nobility could take up arms against his superior was an insult of the highest level. Young men of the nobility started their martial training at the age of eight, learning the three basic tenets of the gentry: riding, fighting, and hawking. At the age of fourteen boys started service as a squire and acquired greater competence in the areas of jousting and swordplay, along with education in managerial and clerical skills associated with running a castle. [4] By the time a knight reached the battlefield, he had accumulated over twenty years of training in his highly disciplined, and exclusive, profession. The nobility's laymen counterpart, if fortunate enough to survive birth and infancy, spent his early life either scraping away a meager existence in the field belonging to a lord, or in direct service to a social superior as a servant or page. [5] The entire social order of French society forbade the two from ever engaging in combat with one another because, "French chivalry refused to concede a serious role in war to the non-noble"; but this phenomenon did not occur in England. [6]

Faced with the troublesome fact that England could not begin to match France in the number of mounted knights, King Edward III took the necessary steps to involve his nation's greatest resource in the coming conflict—the yeomen. Banning all sports on the island in 1336 except archery on pain of decapitation, the King ensured that his army would have a force ready to match that of the French. [7] English longbowmen also began their training near age seven, and competed constantly in tournaments and other competitions meant to hone their skills. Compared with the massive upkeep needed to house and train a medieval knight, the archer needed only

his bow, some arrows, and a target to practice his discipline. A skilled archer was able to fire ten to twelve arrows a minute, at a range of up to 300 yards, with such force that one of their three-foot arrows could penetrate an oak door four inches thick. [8] Unbeknownst to the heavy cavalry across the channel, the English archers were training with means in every way comparable, and in some ways more efficiently and resourcefully, than their elite continental adversaries on horseback.

Fighter pilots in the United States Air Force undergo the most rigorous training in their field, anywhere in the world. Without a doubt they are their nation's premier, and most lethal, fighting force. A pilot undergoes roughly three years of extremely intense training before he can join an operational unit, and even then he continues to constantly train and upgrade in his particular weapons system for several more years. Undeniably they are today's knighthood, cased in their "iron cocoons", and riding atop a jet-powered steed. They fancy themselves the last defenders of individual, chivalric combat, facing their opponents on equal ground and matching their skills and weapons in an open fight. But they carry too much of the knight's unappreciative mentality—purposefully keeping a potentially valuable and lethal portion of their forces in a subsidiary role. [9]

America's space operations officers do not serve their nation in hazardous battle zones, nor do they daily place themselves in harm's way; they are more akin to the longbowmen of medieval times, fatally striking from a safe distance using extreme skill and technology to ensure both their protection and the enemy's death. The United States currently possesses both the technology and the means to employ space as an offensive arm, utilizing the "ultimate high ground" to deliver a spectacular arsenal of weaponry without any threat of injury to the men operating the systems. [10] The future of an offensive space arm is as bountiful and unimaginable as airpower was in the days of Billy Mitchell, and there is no doubt spacepower's importance and vitality will grow exponentially from today onward. The men controlling these weapons will eventually match, and eclipse the longbowmen in their ability to strike the enemy with lethality from a position of total safety.

The best comparison of a modern day weapon to the medieval longbow is the airborne, or potentially space-based, laser. Striking from almost ridiculous distances of up to 400 miles, the laser brings absolute supremacy to the area in which it operates; completely nullifying entire areas of air, or space, to enemy operations—just as massed archers could wholly prevent enemy knights from riding into chosen vicinities of a battlefield by threat of saturating the sky with arrows. [11] In addition, as no horse was able to outrun or dodge an arrow launched from a crossbow, no aircraft has the capability to evade or escape a laser traveling at the speed of light.

The absolute pinnacle of the knightly disregard for the archer's potential capabilities, and the subsequent slaughter of the mounted noblemen by the opposing archers, occurred at the Battle of Crécy in 1336. Supremely overconfident in their skill and disdainful of the massed peasants before them, the French knights began the battle:

> Without giving the crossbowmen a chance to soften the English lines, the forward knights plunged uphill against the enemy. Out of range of their targets and pierced by English arrows, the Genoese crossbowmen fell back, throwing down their bows. The King… shouted 'Slay these rascals who get in our way!' while his knights 'in haste and evil order slashed at the archers in their effort to cut a way through… The French launched after attack upon the enemy but the disciplined line of England's longbowmen, stiffened by the long practice their weapon required, held firm and sowed confusion and death by their missiles. [12]

The Genoese archers, though not as skilled as their English counterparts, could have provided the firepower necessary to overwhelm the English forces-but only if they had received the opportunity to perform their duties on the battlefield.

The United States Air Force admittedly declares its assigned mission in Air Force Doctrine Document 1 (AFDD 1) as the ability to "organize, train, equip, and provide forces for the conduct of prompt and sustained combat operations in the air"—not in space. [13] When detailing counter-space operations AFDD 1 confesses the need to "attain and maintain a desired degree of space superiority by the destruction of or neutralization of enemy forces." The document states that the Air Force can reach these results by operations that can "destroy or neutralize an adversary's space systems or the information they provide at a time and place or our choosing through attacks on the space, terrestrial, or link elements of space systems"-admitting that the Air Force must eventually bring the fight into space. [14]

Though acknowledging that space has a role in combat, current Air Force doctrine is unwilling to separate them into two, mutually beneficial and coequal spheres. In the preface to AFDD 2-2, Space Operations, the document requests that the title of the Joint Force Air Component Commander (JFACC) become the Joint Force Air and Space Commander (JFASCC) to "more accurately reflect the emerging role of space in regional operations, and trends occurring in the Joint and Combined Air

operations Centers." [15] The document does not go far enough in its request for the recognition of space power; the air component should not reign over space, rather there should be a Joint Force Space Component Commander. Again, the knights are forcefully pushing the archers to the rear of the fight, and not allowing them to exploit their full, and lethal, potential.

In his work, *The Knight Triumphant: The High Middle Ages, 1314-1485*, author Stephen Turnbull argues that though briefly halted by the longbowmen at the beginning of the Hundred Years War, the knight again ascended to hegemon of the battlefield thanks to improvements of plate armor. He states that between the battles of Crécy and Poitiers the addition of plate armor to the knight's protective cover enabled him to withstand direct hits from the longbowman's arrows. [16] As plate armor increasingly replaced the weaker and more easily penetrable mail and covered more and more of the knight's body, only the unarmored portions of the knight's horse remained vulnerable to attack. Turnbull vies that by the time of the War of the Roses the advancement of armor reached the point that only a bolt from a steel crossbow fired at close range, impacting perpendicularly to the plate could pierce the armor and do damage to the knight. [17] In his opinion, a technological advance had rescued the guardians of chivalry for the time being- at least until the introduction of gunpowder on a large scale.

Today's aircraft do not have the luxury of allowing further technological advances to salvage their profession; the limits of the human circulatory system exist as the single restraining point in jet technology, and have been so for the past twenty-five years. The inability of the human body to withstand more than six G's for any longer than a minute greatly reduces the maneuverability and performance of an aircraft. Without a human in the cockpit, aircraft could make tighter turns, accelerate, and decelerate at much greater rates. Aircraft technology reached this point with the introduction of the F-4 Phantom. Designers now place governors aboard their aircraft to ensure that the pilots will not exceed the tolerable G limits. [18] Unless engineers develop an extremely effective G-suit, greatly surpassing today's standard, technology will not come to the aid of the pilot like plate armor did to the knight; when the human is the weak link in the system only evolution can improve the system.

To truly foster an environment conducive to developing space power, future space warriors need to believe and recognize that they are indeed the future of warfare; they cannot feel as if they are cowardly crouching inside their silos or their operations centers. Since the first recorded use of the missile weapon in Homer's *The Odyssey*, where Paris used the cowardly bow to finally kill Achilles, men have looked down upon those who hit their enemies from afar, keeping themselves in relative safety. In the twelfth century, an anonymous poet wrote that the archer was "a coward who dared not come close to his foe." [19] These instances highlight one simple fact; one man was able to kill another without placing himself in harm's way, while the other felt that the situation was not fair. The tide of warfare favors those who adapt to overcome their enemy—not those whose strict abidance to doctrine, whether it be the chivalric code or air superiority, restricts their ability to efficiently execute combat.

Soldiers of every successive generation have looked back in awe at their warrior predecessors, amazed at how true and untainted their style of warfare was. Some generations feared advances in technology—examples include Japan's abandonment of the gun in the early 1600's due to fears that it threatened the Samurai class and Pope Innocent II's 1139 declaration of the immorality of the crossbow in its use against other Christians. [20] In the scope of aviation, today's pilots look at the tenacity and bravery exhibited by Vietnam era pilots, who have only admiration for the valiant and selfless bomber crews of World War Two, who in turn looked at the intrepid and fearless barnstormers and biplane pilots of World War One to find true acts of heroism. [21] The constantly changing role of technology in warfare breeds certain nostalgia for the past, but it is those who embrace the future, today, that will be triumphant in the battles of tomorrow.

French knights in medieval times died by the multitudes in the Hundred Years War because they refused to believe that there was anything on Earth that could challenge their chivalric training, skill, and noble breeding. Today's fighter pilot will soon find himself in the same precarious position, unsure of what hit him and perhaps in denial of his own decline. There is no current threat to America's pilots, as the United States has an overwhelming superiority in space technology; but this disparity is not permanent as new threats emerge.

The United States Air Force needs to either fully embrace the boundless potential of space power and release it from its subordinate role, placing it on a nominally independent status with itself comparable to the United States Marine Corp's relationship with the United States Navy, or relinquish all control of its space assets and allow the formation of a completely independent United States Space Force. From either of these points, space warriors will be able to cultivate their own particular military ethos, unhampered by the boastful cries of those who would have a purely supportive role for space assets.

If the French knights would have allowed their own crossbowmen, who were in many ways inferior to the English

longbowmen, to operate on an equal level with their mounted comrades, the combined force of the two would have proved thoroughly destructive to the greatly outnumbered English forces. The same could be true for a united, and cooperative Space and Air Force, which has the potential to rule the battlefield- whether in space or the air - for many years to come.

Bibliography

Primary Resources

Air Force Doctrine Document 1. Basic Air Force Doctrine. Headquarters Air Force

Doctrine Center: Maxwell Air Force Base, Alabama, September 1997.

Air Force Doctrine Document 2-2. Space Operations. Headquarters Air Force

Doctrine Center: Maxwell Air Force Base, Alabama, November 2001.

Froissart, Jean. Chronicles. Translated by Geoffrey Brereton. Edited by Betty Raddice.

London: Penguin Books, 1968.

Space Warfare Presentation. Space Warfare Center- Peterson Air Force Base, Colorado.

17 Oct 2002.

Secondary Sources

Dehart, Roy L. ed. *Fundamentals of Aerospace Science*. 2d ed. Philadelphia: Lippincott, Williams, and Walker, 1996.

Diamond, Jared. *Guns, Germs, and Steel: The Fates of Human Civilizations.* New York: W.W. Norton and Company, 1999.

Grenier, John, Maj, USAF. "A New Construct for Air Force Counterspace Doctrine." Journal of Airpower, (November 2002).

Oman. C.W.C. *The Art of War in the Middle Ages*. John H. Beeler, ed. London: Cornell University Press, 1953.

Polybius. *The Rise of the Roman Empire*. Translated by Ian Scott-Kilvert. London: Penguin Books, 1979.

Tuchman, Barbara. *A Distant Mirror: The Calamitous 14th Century*. New York: Ballantine Books, 1978.

Turnbull, Steven. *The Knight Triumphant: Chivalry in the High Middle Ages, 1314-1485*. London: Cassell and Company, 2001.

The Beckoning Web Page of Medieval History, Folklore, Poetry and Prose. Chronology of the Crossbow. 1 June 2001, 4 December 2002. http://www.thebeckoning.com/medieval/crossbow/chronology.html.

Endnotes

[1] Polybius, *The Rise of the Roman Empire*, trans. Ian Scott-Kilvert, ed. Betty Raddice (London: Penguin Books, 1979), 80.

[2] Froissart, *Chronicles*, trans. Geoffrey Brereton , ed. Betty Raddice (London: Penguin Books, 1968), 140-142, 146-148. Froissart speaks of "the finest flower" of French chivalry falling at the Battle of Poitiers and goes on to detail how the French government had to operate with so many leading men now dead.

[3] C.W.C. Oman, *The Art of War in the Middle Ages*, ed. John H. Beeler (London: Cornell University Press, 1953), 125.

[4] Barbara W. Tuchman, *A Distant Mirror: The Calamitous 14th Century* (New York: Ballantine Books, 1978), 51-53.

[5] Ibid., 50. Tuchman gives the ratio of infant death at around one or two out of three, with the peasantry reproducing at a much lower rate than the nobility "the investment of love in a young child may have been so unrewarding that by some ruse of nature, as when overcrowded rodents in captivity will not breed, it was suppressed.

[6] Ibid., 85.

[7] Froissart, 58.

[8] Oman, 119.

[9]This point is particularly remarkable due to the fact that the Air Force once served in this same subservient fashion under the army before its independence in 1947. The Air Force's unwillingness to recognize the potential of space power stems from either of two options: it does either not believe that space has the assets and the capability to become a force by itself, or the realization that it has become what it had fought against fifty-five years ago is too much for the Air Force leadership to accept.

[10] The current mission of Air Force Space Command is to provide support for the warfighter in the forms of intelligence, reconnaissance, and warning. The proposed weapons include the space-based laser, capable of exploding missiles and aircraft in mid-flight, high-powered microwaves capable of disabling other satellites, and the ability to launch titanium "Rods from God" that travel to earth at exceedingly high velocities, delivering enormous amounts of energy on impact. See Space Warfare Presentation, Space Warfare Center: Peterson Air Force Base, Colorado, 17 Oct 2002 for more information on current, and future space weapons systems.

[11] Ibid.

[12] Tuchman, 87. Froissart adds that the English archers "poured out their arrows on the Genoese so thickly and evenly that they fell like snow." When the French knights took to hacking through their own line of archers, "The English continued to shoot into the thickest of the crowd, wasting none of their arrows. They impaled or wounded horses and riders, who fell to the ground in great distress, unable to get up again without the help of several men." See Froissart, 88-89.

[13] Air Force Doctrine Document 1- Air Force Basic Doctrine, Headquarters Air Force Doctrine Center, Maxwell Air Force Base, Alabama, September 1997, 43.

[14] Ibid 47. To take out an enemy's "space link" system, a force would have to use weapons in space—either fired from Earth, or more logically, from space.

The document further addresses the need for intensification of space power, stating "Continued suppression of the space threat may be required in conjunction with other offensive actions under way within the joint area of operation." For more information on prospective problems in the Air Force's space doctrine see John Grenier, Maj, USAF, "A New Construct for Air Force Counterspace Doctrine", Journal of Airpower, (Nov. 2002). Maj Grenier argues that the Air Force is trying to mirror counterair doctrine onto its counterspace doctrine. He states this action as inherently unworkable due to, among other things, the difference of the mediums in which the systems operate.

[15] Air Force Doctrine Document 2-2, Space Operations, Headquarters Air Force Doctrine Center Maxwell Air Force Base, Alabama, November 2001, 2.

[16] Stephen Turnbull, *The Knight Triumphant: The High Middle Ages, 1314-1485* (London: Cassell and Company, 2001), 65.

[17] Ibid., 231.

[18] Roy L DeHart, ed., *Fundamentals of Aerospace Medicine*, 2d ed. (Philadelphia: Lippincott, Williams, and Wilkins, 1996), 207, 257. Cadet (formerly A1C) Adam Wolfe, a former jet mechanic, also informed me that the Pratt and Whitney 220 Engines used on an F-15C greatly out produce the acceptable G levels for a human merely during acceleration.

[19] Tuchman, 86.

[20] Jared Diamond, *Guns Germs and Steel: The Fates of Human Civilization* (New York: W.W. Norton and Company, 1999), 257-258, and Chronology of the Crossbow, http://www.thebeckoning.com/medieval/crossbow/chronology.html, 4 December 2002. respectively.

[21] These ideas originated in the mind of C1C Adam Wolfe during a conversation I had with him about nostalgic heroism in combat, and I cannot take credit for them.

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Major Charles D. Dusch, Jr. is an Assistant Professor of Military Strategic Studies at the U.S. Air Force Academy. He is the Director of the Cadet Air and Space Strategy and Instructor School (CASIS), a specialized institution linking Operational Art with National Security Strategy. He received a Bachelor of Arts Degree in History from West Virginia University and a Master of Science Degree in Operations Management from Arkansas University. He has over 2,100 flight hours in USAF F-15E and F-4 aircraft, including over 90 hours of combat time. He has also been a Titan II ICBM crewmember. Major Dusch has recently published a history of arms control during the Reagan Administration in *Milestones in Strategic Arms Control, 1945-2000: United States Air Force Roles and Outcomes* (Air University Press), as well as an article on Operation Anaconda and joint doctrine in *Proceedings* (U.S. Naval Institute Press). He will pursue his Ph.D. in History at West Virginia University this fall.

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